Vol. 1015 Number 4

OFFICIAL GAZETTE

of the

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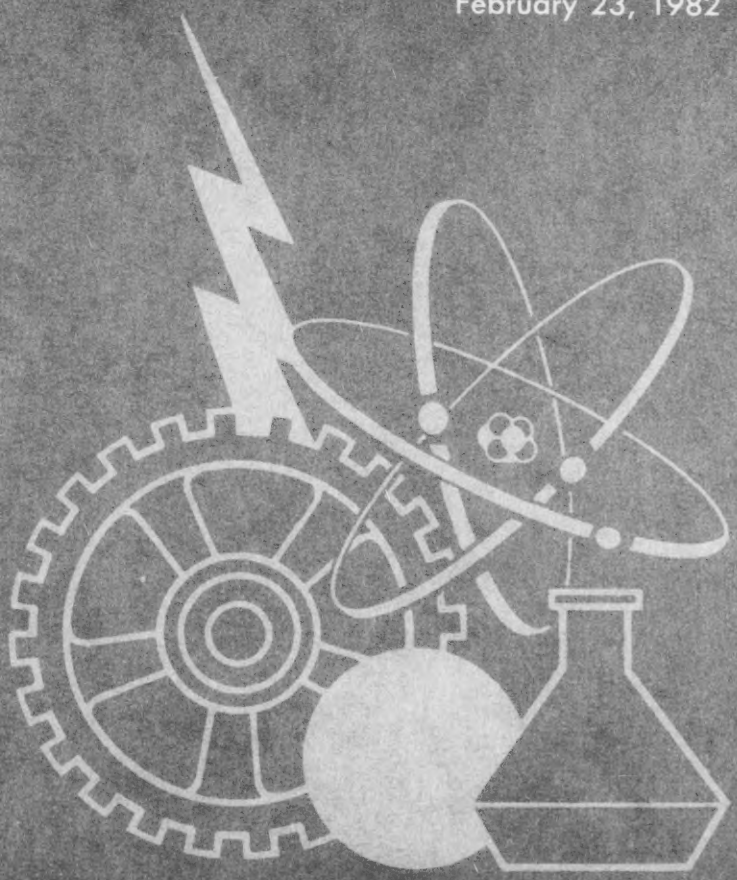
PATENTS

February 23, 1982



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OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

February 23, 1982 Volume 1015 Number 4

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THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly, subscription $360.00 per annum for first-class mailing, also available as fourth-class mail at $250.00 domestic; $312.50 foreign; foreign first-class mailing rates will be furnished upon request; single copies each, $6.50 domestic, $8.15 foreign.

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries and the most recent PCT rule changes see the notices appearing in the Official Gazette at 1001 O.G. 14 on Dec. 9, 1980 and at 1012 O.G. 20 on Nov. 17, 1981.

Note that the international fees have been increased as of Jan. 1, 1982. The current schedule of fees is as follows:

Transmittal fee	$ 35.00
Search fee	300.00
International Fees	
Basic Fee (first 30 pages)	270.00
Basic Supplemental Fee (for each sheet over 30)	6.00
Designation Fees	65.00

GERALD J. MOSSINGHOFF,
Jan. 19, 1982. *Commissioner of Patents and Trademarks.*

Board of Appeals Decisions Rendered in the Month of Jan. 1982

Affirmed	170
Affirmed in Part	13
Reversed	72
Total	255

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,856,052, Re. S.N. 278,019, Filed June 29, 1981, Cl. 138/119, HOSE STRUCTURE, Robert H. Feucht, Owner of Record: *The Goodyear Tire & Rubber Co., Akron, Ohio,* Attorney or Agent: David M. Ronyak, Ex. Gp.: 243

4,277,227, Re. S.N. 321,192, Filed Nov. 13, 1981, Cl. 417/63, APPARATUS FOR CONVERTING A PUMP TO A CONTROLLER, Jon A. Jenkins, Owner of Record: *Imed Corp., San Diego, Calif.,* Attorney or Agent: Ellsworth R. Roston, et al., Ex. Gp.: 343

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

Re. 30,159, Reexam. No. 90/000,141, Requested: Jan. 25, 1982, Cl. 57/291, FALSE TWIST-CRIMPING MACHINE, Hermann Kubler, Owner of Record: *Barmag Barmer Maschinenfabrik, AG, Remscheid- Lennep, Fed. Rep. of Germany,* Attorney or Agent: Charles B. Park, III, Ex. Gp.: 240, Requester: Barmag Barmer Maschinenfabrik, AG

3,769,775, Reexam. No. 90/000,146, Requested: Jan. 26, 1982, Cl. 52/731, BUILDING WALL CONSTRUCTION, Kazimierz J. Brzezinski, Owner of Record: *Kawneer Co., Inc., Niles, Mich.,* Attorney or Agent: Mason, Kolehmainen, et al., Ex. Gp.: 354, Requester: The Anaconda Co., Denver, Colo.

4,096,505, Reexam. No. 90/000,140, Requested: Jan. 22, 1982, Cl. 354/246, FOCAL PLANE SHUTTER FOR CAMERAS, Eiichi Onda, et al., Owner of Record: *Seiko Koko Kabushiki Kaisha, Tokyo, Japan,* Attorney or Agent: Burns, Lobato & Adams, Ex. Gp.: 211, Requester: Copal Co. Ltd., Tokyo, Japan

4,270,911, Reexam. No. 90/000,139, Requested: Jan. 21, 1982, Cl. 493/410, METHOD AND SYSTEM FOR PROVIDING ELONGATED Z-FOLD COPY PAPER, Thomas A. McNew, Owner of Record: *Digital Magnetic Systems, Inc., Oklahoma City, Okla.,* Attorney or Agent: William R. Laney, Ex. Gp.: 330, Requester: Stanley B. Green, Ansley Paper Co., Inc., Lawton, Okla.

4,285,285, Reexam. No. 90/000,142, Requested: Jan. 25, 1982, Cl. 112/79FF, FEED DEVICE AND METHOD FOR FEEDING YARN OR OTHER TEXTILE MATERIAL, George Chambers, et al., Owner of Record: *Newroyd Ltd., Lancashire, England,* Attorney or Agent: Anthony J. Casella, Ex. Gp.: 353, Requester: J. Rodman Steele, Jr., Philadelphia, Pa.

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. Information tending to affect the eligibility of said applicants on moral, ethical or other grounds, should be furnished the Commissioner of Patents and Trademarks on or before Mar. 23, 1982.

Donald J. Quigg,
Jan. 29, 1982. *Chairman, Committee on Enrollment.*

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Notice of Application for Recordation of Trade Name

SON-EXPORT, S.A. de C.V.

Application has been filed pursuant to section 133.12, Customs Regulations (19 CFR 133.12), for the recordation under section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124), of the trade name SON-EXPORT, S.A. de C.V., used by Son-Export, S.A. de C.V., a company governed by the laws of The Republic of Mexico, located at Plutarco Elias Calles y Rosales #124, Desp. 3003, Hermosillo, Sonora, Mexico.

The application states that the trade name is associated with fresh frozen shellfish (shrimp). Appropriate accompaning papers were submitted with the application.

Before final action is taken on the application, consideration will be given to any relevant data, views, or arguments submitted in writing by any person in opposition to the recordation of this trade name. Any such submission should be addressed to the Commissioner of Customs, U.S. Customs Service, Washington, D.C. 20229, in time to be received not later than 30 days from the date of publication of this notice in the Federal Register.

Notice of the action taken on the application for recordation of the trade name will be published in the Federal Register.

ANTHONY L. PIAZZA,
Dec. 14, 1981. *Acting Director, Entry, Procedures and Penalties Division.*

Patent Data Available on Magnetic Tape

The patent data files described below are available on industry standard computer magnetic tapes from the National Technical Information Service (NTIS):

A. Current Patent Full Text File
Produced on a weekly basis, contains full text information on patents processed by means of the electronic photocomposition system and issued during that week. Begins with information for patents issued in the first week of the current calendar year.

B. Current Patent Bibliographic File
Produced on a weekly basis, contains bibliographic information on patents processed by means of the electronic photocomposition system and issued during that week. Begins with information for patents issued in the first week of the current calendar year.

C. Quarterly Patent Bibliographic File
Produced at the end of each calendar quarter, contains bibliographic information on patents processed by means of the electronic photocomposition system and issued during the calendar quarter. Begins with information for patents issued in the first week of the current calendar year.

D. Retrospective Patent Full Text File
Contains full text information for patents processed by means of the electronic photocomposition system and issued from Aug. 1970 through Dec. preceding the current calendar year. Full coverage of such utility patents began in Dec. 1974; reissues in July 1975; and plants, designs, and defensive publications in Dec. 1976.

E. Retrospective Patent Bibliographic File
Contains bibliographic information on patents processed by means of the electronic photocomposition system and issued from Aug. 1970 through Dec. preceding the current calendar year. Full coverage of such utility patents began in Dec. 1974; reissues in July 1975; and plants, designs, and defensive publications in Dec. 1976.

F. Selected Patent Full Text File
Contains full text information on 300 patents randomly selected from the Retrospective Patent Full Text File.

G. Selected Patent Bibliographic File
Contains bibliographic information on the same 300 patents (identified in Item E above) randomly selected from the Retrospective Patent Full Text File.

H. Patent Classification File (Classification Sequence)
Contains patent number, class and subclass information on all patents issued by the PTO. Arranged in classification sequence.

I. Patent Classification File (Patent Sequence)
Contains patent number, class and subclass information on all patents issued by the PTO. Arranged in patent number sequence.

J. Patent Technology Assessment and Forecast File
Produced semiannually, contains essentially all the first page bibliographic information on patents issued from Jan. 1, 1975. Contains some bibliographic information on patents issued from Jan. 1, 1963 to Dec. 31, 1975. Arranged in patent number sequence.

K. Company Name File
Produced semiannually, contains company codes, total patents assigned to each company, and company names for patents issued from Jan. 1, 1969. Arranged in company code sequence.

L. Manual of Classification
Contains the codes and descriptive titles of all classes and subclasses in the U.S. Classification System.

M. Index to the U.S. Patent Classification
Contains an alphabetical list of subject heading referring to specific classes and subclasses of the classification system.

N. Standard Industrial Classification Concordance Produced annually, contains U.S. Class/Subclass codes with related Standard Industrial Classification (SIC) codes for all classifications as of the end of 1979. Arranged in classsification sequence.

O. Concordance: U.S. Patent Classification to International Patent Classification (IPC)
Contains U.S. Class/Subclass codes with related IPC codes. Used as a *guide* for relating U.S. to IPC codes.

P. Inventor Name File
Produced semiannually, contains the patent number and inventor name and address (city and state for inventors of assigned patents, full address for inventors of unassigned patents) of patents issued from Jan. 1, 1975. Arranged in patent number sequence.

Q. Patent Title File
Produced semiannually, contains patent number and title of patents issued from Jan. 1, 1969. Arranged in patent number sequence.

R. Attorney Roster
Contains names and addresses, registration and telephone number, availability to accept clients and status as attorney or agent. This is all of the information presently contained in the PTO publication Attorneys and Agents Registered to Practice Before the U.S. Patent and Trademark Office.

S. Foreign Patent Classification File (Document Identifier Sequence)
Contains Country Codes, Document Identifier, Publication Date, and U.S. Subclass information for foreign patents. The file contains information on foreign patents added to the Examiner Search File since Jan. 1979, foreign patents reclassified since May 1981, retrospective reclassification data as available, and information on foreign patents in selected subclasses that have undergone file integrity processing. Coverage, with respect to a specific country or class/subclass, is fragmentary although the file currently contains over 500,000 unique document identifiers.

T. Class 364, Subclass 200 Index Term File
Contains codes for subject matter descriptors related to technical information in patents classified in Class 364, Subclass 200.

U. Class 364, Subclass 900 Index Term File
Contains codes for subject matter descriptors related to technical information in patents classified in Class 364, Subclass 900.

The Current Patent Full Text File and Current Patent Bibliographic File are available on a one year subscription basis. All other files are available on a one-time basis. The Quarterly Patent Bibliographic File is available on a calendar quarter basis to new subscribers of the Current Patent Bibliographic File.

For further information contact the National Technical Information Service; 5285 Port Royal Rd., Springfield, Va. 22161. Telephone (703) 487-4807.

In addition to the above, the PTO has entered into an agreement with a commercial firm to provide the PTO access to and support for the use of a proprietary full-text processing system. Using this system, the PTO will carry out research and evaluation projects dealing with automated full-text searching of U.S. patents. As part of this research the PTO will provide to the commercial firm a special compilation copy of the Retrospective Patent Full Text File and selected portions of the Retrospective Patent Full Text available from NTIS. These files will be available either from the PTO or NTIS depending upon the level of interest in obtaining copies.

The special compilation copy of the Retrospective Patent Full Text File is identical to the Retrospective Patent Full Text File available from NTIS with the exception of the addition of a discipline category indicator which identifies patents issued in (1) chemical, (2) electrical, (3) mechanical, (4) chemical and electrical, (5) electrical and mechanical, (6) chemical and mechanical, or (7) other art areas. The initial file will contain patents issued through Feb. 24, 1981 and will be updated for a period of approximately one year. There are no current plans to provide updates beyond this one year period.

The selected portions of the Retrospective Patent Full Text File, consisting of six separate files, are as follows:

File Name	Class	Subclass	Approximate No. of Patents
Chemical Testing	23	230R-232E 901-933	4,100
	422	50-104	
General Purpose Programmable Digital Computer Systems and Miscellaneous Digital Processing Systems	364	200-(end) 900	3,780
Automatic Fuel Controls	60	39.28R, T and P 243	430
Medicines and Drugs	424	(all)	32,140
Active Solid State Devices	357	(all)	8,660
Stoves and Furnaces	126	(all)	4,430

These files contain the full text of patents processed by means of the electronic photocomposition system and issued from Aug. 1970 through Jan. 1981. Full coverage of such patents began in Dec. of 1974. There are no current plans to update these files.

For further information contact James W. Shores, Data Base Systems Administrator, Patent Documentation Organizations, Washington, D.C. 20231. Mr. Shores' telephone number is (703) 557-3816.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Jan. 22, 1982.

Adverse Decisions in Interference

In the designated interference involving the indicated claims of the following patents, final decisions having been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,520,861, J. E. Thomson and G. E. Waples, Jr., COPOLYMERS OF ETHYLENE, Interference No. 99,752, decided Sept. 19, 1980, claims 1-8 & 10.

Patent No. 3,592,936, A. D. Marcus and R. E. Dempski, METHOD OF TREATMENT USING PHARMACEUTICAL COMPOSITION CONTAINING DIMETHYL SULFOXIDE, Interference No. 100,525, decided Nov. 13, 1981, claim 1.

Patent No. 3,670,285, J. A. English, VARIABLE RESISTANCE CONTROL WITH END COLLECTOR., Interference No. 98,455, decided Apr. 18, 1980, claim 22.

Patent No. 3,786,314, W. Misch, REGULATING ARRANGEMENT FOR SOLENOID VALVES AND THE LIKE, Interference No. 100,493 decided Nov. 16, 1981, claims 1-7, 12 and 13.

Patent No. 3,917,587, R. R. Chauvette, CEPHALOSPORIN ETHERS, Interference No. 99,580, decided Sept. 30, 1981, claim 30.

Patent No. 3,917,587 R. R. Chauvette, CEPHALOSPORIN ETHERS, Interference No. 99,582, decided Sept. 30, 1981, claims 3 and 9.

Patent No. 3,917,588, R. R. Chauvette, ALPHA-AMINOACYL CEPHALOSPORIN ETHERS, Interference No. 99,581, decided Sept. 30, 1981, claims 4, 5 and 9.

Patent No. 4,103,008, I. Toshiyasu, H. Minoru, H. Mariko and N. Hazime, 7[2(2,3-DIOXOPIPERAZIN-1-YL-CARBONYLAMINO) SUBSTITUTED 2 PHENYL-ACETAMIDO]-3-2'-THIADIAZOLYL CEPHALOSPORANIC ACID DERIVATIVES, Interference No. 100,406, decided Nov. 24, 1981, claims 1-3, 8, 15 and 17.

Patent No. 4,157,267, H. Odawara, M. Ohno, T. Yamazaki and M. Kanaoka, CONTINUOUS SEPARATION OF FRUCTOSE FROM A MIXTURE OF SUGARS, Interference No. 100,551, decided Nov. 13, 1981, claims 1-3.

Patent No. 4,207,315, J. J. Voorhees and D. H. Russell, PROCESS FOR TREATING PROLIFERATIVE SKIN DISEASES USING CERTAIN DIAMINO COMPOUNDS, Interference No. 100,672, decided Nov. 20, 1981, claim 6.

NANNIE B. HENRY,
Deputy Clerk Board of Patent Interferences.

Errata

The following registration numbers, listed in the "Trademark Registrations Issued" section of the Official Gazettes of Sept. 8, 1981, Oct. 27, 1981, Nov. 10, 1981, Nov. 17, 1981, Dec. 1, 1981 and Dec. 8, 1981, were assigned, prematurely, to published marks for which the opposition period had not yet run:

TMOG Sept. 8, 1981
1,168,713

TMOG Nov. 17, 1981
1,178,140

TMOG Oct. 27, 1981
1,175,271
1,175,469
1,175,494

TMOG Nov. 10, 1981
1,177,568

TMOG Dec. 1, 1981
1,180,041

TMOG Dec. 8, 1981
1,181,015
1,181,524
1,181,525

Consequently, certificates of registration bearing the above-identified numbers were not issued on the dates indicated, and these registration numbers have been vacated.

Jan. 27, 1982.

HERBERT C. WAMSLEY,
Acting Assistant Commissioner for Trademarks.

Status of PTO Services

The following is an update of the status of PTO services as of Jan. 29, 1982:

Service Item	Performance Goal (Calendar Days)	Actual	Comment
Mail Processing & Delivery	4	4.5	
Filing Receipts:			
Patents	22	98	Holiday absenteeism prevented improvements during December.
Trademarks	42	40	Reduction of 24 days in the past month.
Patent Copies:			
Window Coupons	5	84% within 5 days 99% within 10 days	
Mail Coupons	15	95% within 15 days 99% within 20 days	
Letter Orders	20	70% within 15 days 99% within 30 days	
Certified Copies:			
Trademark Regs.	30	52	No significant improvement due to increase in requests.
All other	Being established	98% within 15 days 99% within 20 days	
Trademark Search Room:			
Filing Drawings	21	26	Reduction of 8 days in past month.
Filing Reg. Certificates	3	10	Reduction of 27 days in past month.
Patent Assignments	15	57	Overtime halted due to unavailable funding.
Trademark Assignments	21	84	Overtime halted due to unavailable funding.
Patent Official Gazette	Issue Date	On schedule	
Patent Grants	Issue Date	8 days late	Contractor problems due to holidays absenteeism.
Trademark Official Gazette	Issue Date	On schedule	
Trademark Registrations	Issue Date	On schedule	

Feb. 1, 1981.

RICHARD J. SHAKMAN,
Assistant Commissioner for Administration

PATENT NOTICES

Certificates of Correction for the Week of Feb. 23, 1982

Re. 30,584	4,270,610	4,292,741	4,297,511
3,876,548	4,272,827	4,292,959	4,297,743
4,026,846	4,273,321	4,293,247	4,298,404
4,143,215	4,275,732	4,293,589	4,298,407
4,155,693	4,275,869	4,293,590	4,298,418
4,170,189	4,279,254	4,293,663	4,298,518
4,174,261	4,279,991	4,293,891	4,298,647
4,182,790	4,281,492	4,293,927	4,299,098
4,207,424	4,281,877	4,294,037	4,299,412
4,207,624	4,282,071	4,294,154	4,299,731
4,217,683	4,282,174	4,294,224	4,299,751
4,227,440	4,283,293	4,294,955	4,300,196
4,232,625	4,283,429	4,295,690	4,300,859
4,233,023	4,284,959	4,295,992	4,301,122
4,234,729	4,285,204	4,296,023	4,301,237
4,236,207	4,285,981	4,296,054	4,301,350
4,239,283	4,287,103	4,296,208	4,301,389
4,240,604	4,287,206	4,296,245	4,301,492
4,242,501	4,287,783	4,296,393	4,301,504
4,244,851	4,288,003	4,296,716	4,301,972
4,246,767	4,288,043	4,296,757	4,302,112
4,255,113	4,288,648	4,297,095	4,302,568
4,257,002	4,289,789	4,297,168	4,302,640
4,258,201	4,289,804	4,297,219	4,302,822
4,259,474	4,289,923	4,297,289	4,303,452
4,262,326	4,290,521	4,297,313	4,304,220
4,263,942	4,291,202	4,297,338	4,304,301
4,265,400	4,291,326	4,297,358	4,305,457
4,265,513	4,291,408	4,297,382	4,305,465
4,268,980	4,292,029	4,297,474	4,305,676
4,269,915	4,292,365	4,297,482	

Patent Suits

Notices under 35 USC 290; Patent Act of 1952

3,109,468, Amfac Foods, Inc., VEGETABLE SLICING APPARATUS; **3,116,772, same,** METHOD OF SLICING VEGETABLES, **filed** Feb. 4, 1981, D.C. Del. (Wilmington), Doc. 81-49, *Amfac Foods, Inc.* v. *AKF Foods, Inc.* Stipulation and Order dismissing complaint and counterclaim with prejudice filed Oct. 15, 1981.

3,116,772. (See 3,109,468.)

3,122,474, Hoffmann-LaRoche, Inc., CHLORDIAZEPOXIDE AND CLIDINIUM HALIDE COMPOSITION AND METHOD OF USING SAME, **filed** Sept. 10, 1980, D.C.N.J. (Newark), Doc. 80-2954, *Hoffmann-LaRoche, Inc.* v. *MD Pharmaceutical, Inc.* Stipulation of dismissal of action filed Oct. 22, 1981.

3,156,482, Chicago Roller Skate Co., DETACHABLE TOE STOP FOR ROLLER SKATE CONSTRUCTION, **filed** Oct. 26, 1981, D.C., W.D. Wis. (Madison), Doc. 81-C-756, *Chicago Roller Skate Co.* v. *Laser Skate and Distributing, et al.*

3,242,219, Union Carbide Corp., PREPARATION OF BISPHENOLS, **filed** June 5, 1975, D.C., S.D. Tex. (Galveston), Doc. 75-G-79, *Union Carbide Corp.* v. *The Dow Chemical Co.* Judgment for Plaintiff filed Aug. 11, 1981. Defendant's Notice of Appeal filed Oct. 15, 1981.

3,319,734, George M. Pavey, Jr., ELASTIC DETECTION STREAMER DEAD SECTION FOR WATER BORNE SEISMIC SURVEYING SYSTEM, **filed** Nov. 10, 1980, D.C., S.D. Tex. (Houston), Doc. G-81-326, *Whitehall Corp.* v. *Geophysical Co. of Norway (U.S.), Inc.*

3,385,140, Carpenter Mfg. Co., Inc., FLAT MULTICONDUCTOR STRIPPING APPARATUS, **filed** Aug. 13, 1981, D.C., N.D. Ill. (Chicago), Doc. 81 C 4618, *Carpenter Mfg. Co., Inc.* v. *American Navigator.*

3,420,001, M-P Corp., ADJUSTABLE CLOSURE LOCK; **Re. 27,161, same, filed** Dec. 17, 1980, D.C., E.D. Mich. (Detroit), Doc. 80-74717, *M-P Corp.* v. *VSI Hardware Industries.* Defendent's Motion to Dismiss for Want of Venue is hereby granted and Plaintiff's Complaint is dismissed without prejudice and without costs to either party. Filed Oct. 1, 1981.

3,430,221, Barringer Research Ltd., PROXIMITY DETECTOR, **filed** July 9, 1980, D.C., W.D. Pa. (Pittsburgh), Doc. 80-925, *Federal Laboratories, Inc.* v. *Barringer Research Ltd., et al.* Judgment entered in favor of Plaintiff and against Defendants, declaring and determining that Pat. No. 3,340,221 is invalid. Filed Oct. 26, 1981.

3,437,149, Seaboard Pipe & Equipment Co., Inc., CABLE FEED-THROUGH MEANS AND METHOD FOR WELL HEAD CONSTRUCTIONS, **filed** Sept. 17, 1981, D.C., C.D. Calif. (Los Angeles), Doc. 81 4870, *Seaboard Pipe & Equipment Co., Inc.* v. *Alex Sipowicz, doing business as Sipp Machine & Tool Co., et al.*

3,488,017, Staar S.A., STOP SYSTEM FOR A TAPE REEL DRIVE, **filed** Oct. 29, 1981, D.C., N.D. Ill. (Chicago), Doc. 81C6081, *Staar S.A.* v. *Ford Motor Co.*

3,567,117, Hedco, Inc., ICE NUCLEI FORMATION; **3,703,991, same,** SNOW PRECIPITATOR; **3,733,029, same,** SNOW PRECIPITATOR, **filed** Oct. 9, 1981, D.C., W.D. Wis. (Madison), Doc. 81-C-714, *The Dewey Electronics Corp.* v. *Cascade Mountain, Inc.* **Same, filed** Oct. 9, 1981, D.C., E.D. Wash. (Spokane), Doc. C-81-616-JLQ, *The Dewey Electronics Corp.* v. *Mt. Spokane Skiing Corp., et al.* **Same, filed** Oct. 16, 1981, D.C. Vt. (Burlington), Doc. 81-315, *The Dewey Electronics Corp.* v. *Magic Mountain Corp.* **Same, filed** Oct. 19, 1981, D.C., N.D.N.Y. (Utica), Doc. 81-CV-1139, *The Dewey Electronics Corp.* v. *Titus Mountain, Inc.*

3,604,322, Friedrick Sohne Maurer, BRIDGING OR EXPANSION JOINTS IN ROADWAYS OF BRIDGES, STREETS, RUNWAYS AND THE LIKE, **filed** Aug. 4, 1981, D.C. Dist. of Columbia (Wash. D.C.), Doc. 81-1835, *Acme Highway Products Corp.* v. *Friedrick Sohne Maurer.* Memorandum and Order granting motion of defendant to dismiss filed Oct. 22, 1981.

3,703,991. (See 3,567,117.)

3,733,029. (See 3,567,117.)

3,783,517, David Post, PATTERN GRADING MACHINE, **filed** Oct. 29, 1981, D.C., S.D.N.Y., Doc. 81-Civ-6671, *Sunny-Young, Inc. and David Post* v. *D & M Tool & Die Machine Shop, Inc., et al.*

3,808,895, John Herman Fitzwater, ELECTRIC FAIL-SAFE ACTUATOR; **Re. 30,135, same, filed** June 26, 1981, D.C., N.D. Ill. (Chicago), Doc. 81C3601, *Ewol, Inc.* v. *Brunswick Corp.* Judgment Order filed Sept. 11, 1981. Plaintiff's motion to vacate order of Sept. 11, 1981 denied. Plaintiff to serve amended complaint against defendant Vapor Corp. by Oct. 16, 1981. Status hearing set for Nov. 6, 1981. Filed Oct. 2, 1981.

3,836,977, Hazeltine Corp., ANTENNA SYSTEM HAVING A REFLECTOR WITH A SUBSTANTIALLY OPEN CONSTRUCTION, **filed** Oct. 26,

1981, U.S. Ct. of Claims (Wash. D.C.), Doc. 623-81C, *Hazeltine Corp.* v. *the United States.*

3,855,780, Casio Computer Co. Ltd., ELECTRONIC CLOCK DEVICE, **filed** Nov. 12, 1981, D.C., S.D.N.Y., Doc. 81-Civ-7019, *Casio Keisanki Kabushiki Kaisha (Casio Computer Co. Ltd.)* v. *E. Gluck Corp., et al.*

3,857,980, Chester A. Johnson, PROCESS FOR PREPARATION AND PRESERVATION OF EGGS, **filed** Sept. 23, 1981, D.C., C.D. Calif. (Los Angeles), Doc. 81 4980, *Star-Kist Foods, Inc.* v. *Chester A. Johnson, et al.*

3,920,838, Flatt and Blackburn, AMINO ACID THERAPY, **filed** Nov. 3, 1981, D.C. Mass. (Boston), Doc. 81-2791, *Massachusetts Institute of Technology* v. *Abbott Laboratories.*

3,942,969, Research Corp., DELAYED RELEASE NUTRIENTS FOR MUSHROOM CULTURE, **filed** Oct. 29, 1981, D.C., E.D. Pa. (Philadelphia), Doc. 81-4427, *Research Corp.* v. *Gourmet's Delight Mushrooms Co., Inc., et al.*

3,960,492, Nuclear Diagnostics, Inc., METHOD FOR DETERMINING AN INDEX OF BINDING PROTEIN CONTENT OF BLOOD, **filed** Nov. 21, 1980, D.C., E.D. Mich. (Detroit), Doc. 80-74396, *Nuclear Diagnostics, Inc.* v. *Advance Medical and Research Center, Inc.* Action dismissed without prejudice. Filed Sept. 29, 1981.

3,968,355, Novo Products, Inc., AUTOMATIC NIGHT LIGHT STRUCTURE, **filed** Nov. 10, 1981, D.C., E.D. Mich. (Detroit), Doc. 81-74169, *Novo Products, Inc.* v. *Leviton Mfg. Co., Inc.*

3,997,979, Joe D. Turner, RODEO TRAINING DEVICE, **filed** Sept. 10, 1980, D.C., S.D. Tex. (Houston), Doc. H-80-2047, *Gilley's Enterprises, Inc. and Joe D. Turner* v. *Buck 'N Broncos, Inc.* **Same, filed** Nov. 14, 1980, D.C. Ariz. (Phoenix), Doc. 80-942, *Gilley's Enterprises, Inc. and Joe D. Turner* v. *Larry Mahan, et al.* **Same, filed** Oct. 1, 1980, D.C., N.D. Ala. (Birmingham), Doc, CV-80-P-1286-S, *Gilley's Enterprises, Inc. and Joe D. Turner* v. *Star Bull, Inc., et al.* Pat. No. 3,997,979 is good, enforceable and valid in law. Defendants are hereby permanently enjoined from further infringing plaintiff's patent. Filed June 12, 1981.

4,008,937, Stanley Aviation Corp., COUPLING ASSMEBLY, **filed** Oct. 1, 1981, D.C., C.D. Calif. (Los Angeles), Doc. 81 5131, *Stanley Aviation Corp.* v. *Hydraflow Supply, Inc.*

4,071,389, Frank E. Ives, CYLINDER-MAKING APPARATUS AND METHOD, **filed** Oct. 29, 1981, D.C., W.D. Okla. (Oklahoma City), Doc. CIV-81-1493, *Frank E. Ives, et al.* v. *Fiberglass Equipment Co., et al.*

4,115,946, Daniel Vukmirovich, FLEXIBLE DISCUS DEVICE, **filed** Feb. 26, 1981, D.C. Mass. (Boston), Doc. 81-0559-C, *Webb Mfg., Inc.* v. *Acorn Products, Inc.* **Same, filed** Jan. 28, 1981, D.C., M.D. Fla. (Orlando), Doc. 81-30-ORL-CIV-R, *Webb Mfg., Inc.* v. *Ronald Sarzier, doing business as Research II.* Defendant is permanently enjoined from infringing Plaintiff's patent. Filed Nov. 16, 1981.

4,139,955, Earl M. Reiback, DISPLAY DEVICE, **filed** Feb. 13, 1981, D.C., S.D.N.Y., Doc. 81-Civ-0875, *Earl M. Reiback* v. *Mechanical Mirror Works, Inc.* Pat. No. 4,139,955 is valid. Defendant is permanently enjoined from infringing Plaintiff's patent. Filed Oct. 26, 1981.

4,144,594, Melvin H. Chapman, FILIGREED BELT AND METHOD OF MAKING SAME, **filed** Oct. 23, 1981, D.C., W.D. Okla. (Oklahoma City), Doc. CIV-81-1472-W, *Amsco Corp.* v. *Nocona Belt Co.*

4,144,720, Tyler Refrigeration Corp., AIR DEFROST SYSTEM USING SECONDARY AIR BAND COMPONENTS; **4,207,747, same; 4,283,922, same, filed** Oct. 19, 1979, D.C. Del. (Wilmington), Doc. 79-497, *Tyler Refrigeration Corp.* v. *Kysor Industrial Corp.* Pat. Nos. 4,207,747 and 4,283,922 were added by supplemental complaint on Nov. 3, 1981.

4,145,818, Hanspeter Kulling, METHOD AND APPARATUS FOR REMOVING A VAPORIZED LIQUID FROM A GAS, FOR USE IN E.G. A PROCESS BASED ON THE FLUIDIZED BED PRINCIPLE, **filed** Aug. 26, 1981, D.C.N.J. (Newark), Doc. 81-2726, *Glatt Air Techniques, Inc.* v. *Aeromatic AG, et al.* Order staying action until Nov. 16, 1981 and terminating action administratively filed Sept. 11, 1981.

4,146,489, Rohm and Haas Co., POLYOLEFIN GRAFT COPOLYMERS, **filed** Jan. 27, 1981, D.C. Del. (Wilmington), Doc. 81-36, *Rohm and Haas Co.* v. *Texaco, Inc.* Plaintiff's Notice of Dismissal pursuant to Rule 41(a)(1)(i) filed Oct. 26, 1981.

4,151,016, Fusion Inc., SINGLE COMPONENT BRAZING PASTE, **filed** Nov. 4, 1981, D.C., N.D. Ohio (Cleveland), Doc. C81-2213, *Fusion, Inc.* v. *Turbobraze Corp., et al.*

4,152,974, National Presto Industries, Inc., HOT AIR CORN POPPER, **filed** Oct. 6, 1981, D.C.N.J. (Newark), Doc. 81-3120, *National Presto Industries, Inc.* v. *Forda Mfg. Co., Ltd.*

4,189,407, Neville Chemical Co., CHLORINATED HYDROCARBONS AND POLYSULFIDE RUBBER SEALANT COMPOSITIONS INCORPORATING SAME; **4,189,408, same, filed** Oct. 26, 1981, D.C., N.D. Ohio (Akron), Doc. C81-2112A, *Neville Chemical Co.* v. *Dover Chemical Corp., et al.*

4,189,408, (See 4,189,407.)

4,207,747. (See 4,144,720.)

4,208,131, Robert L. Mendenhall, ASPHALTIC CONCRETE PATCH MIXING AND HEATING APPARATUS AND METHOD; **4,219,278, same,** ASPHALT-AGGREGATE DRUM MIXING APPARATUS; **4,240,754, same,** ASPHALTIC CONCRETE PATCH MIXING AND HEATING APPARATUS AND METHOD; **4,265,546, same,** ASPHALT-AGGREGATE DRUM MIXING APPARATUS, **filed** Oct. 2, 1981, D.C. Mont. (Butte), Doc. CV-81-93-BU, *Robert L. Mendenhall* v. *Eugene R. Simpson, doing business as Simpson Mfg. Co.*

4,219,278. (See 4,208,131.)

4,222,537, Shimano Industrial Co., Ltd., FISHING REEL, **filed** Oct. 29, 1981, D.C. Md. (Baltimore), Doc. J-81-2815, *Shimano Industrial Co., Ltd.* v. *Daiwa Seiko, Inc., et al.*

4,240,173, John C. Sherrill, POOL VACUUM, **filed** Oct. 27, 1981, D.C. Ariz. (Phoenix), Doc. CIV-81-1268-PHX-EHC, *Innovative Products Corp.* v. *Rainbow Lifegard Products, Inc., et al.*

4,240,193, Reuben Krein, METHOD OF STUFFING COMPRESSIBLE PRODUCTS INTO FLEXIBLE COVERS; **4,251,975, same,** METHOD AND APPARATUS FOR STUFFING CUSHIONS, MATTRESSES, AND THE LIKE; **4,272,874, same,** APPARATUS FOR STUFFING COMPRESSIBLE PRODUCTS INTO FLEXIBLE COVERS, **filed** Sept. 3, 1981, D.C., C.D. Calif. (Los Angeles), Doc. CV-81-4583-Kn(Gx), *BJK Industries, Inc.* v. *Roy C. Clements, et al.* **Same, filed** Oct. 2, 1981, D.C. Ariz. (Phoenix), Doc. 81-1173 PHX VAC, *BJK Industries, Inc.* v. *EZE Corp., et al.*

4,240,754. (See 4,208,131.)

4,247,136, Hancor, Inc., INTERNAL COUPLING STRUCTURE AND JOINT FOR PIPE OR TUBING, **filed** Oct. 27, 1981, D.C., C.D. Ill. (Danville), Doc. 81-2286, *Hancor, Inc.* v. *Albert C. Hackl, et al.*

4,248,478, Leonard Aron, SELF-SUPPORTING INFANT CHAIR, **filed** Sept. 11, 1981, D.C., C.D. Calif.

(Los Angeles), Doc. 81 4722, *Leonard Aron* v. *Daniel Cohen, et al.*

4,251,975. (See 4,240,193.)

4,265,546. (See 4,208,131.)

4,272,874. (See 4,240,193.)

4,283,922. (See 4,144,720.)

4,291,427, Richard Rhea, FLOATATION GARMENT, **filed** Oct. 19, 1981, D.C., E.D. Mo. (St. Louis), Doc. 81-1300, *Richard Rhea* v. *Thomas Birkenmeir.*

4,292,986, Capella Inc., ELECTRIC HAIR BRUSH; **D. 251,205, same,** HAIR STYLER; **D. 251,638, same,** HAIR BRUSH, **filed** Aug. 3, 1978, D.C., S.D. Fla. (Miami), Doc. 78-3493-CIV-JE, *Capella, Inc.* v. *Saveway Industries, Inc.*

4,296,580, Roger Neil Weinar, WALL CONSTRUCTED FROM PANELS HELD IN POSITION WITH THE AID OF CONCEALED FASTENERS AND CONCEALABLE FASTENERS FOR USE IN ASSEMBLING SUCH WALL, **filed** Oct. 28, 1981, D.C., E.D. Mich. (Detroit), Doc. 81-73995, *National Gypsum Co.* v. *Rollform, Inc.*

Re. 27,161. (See 3,420,001.)

Re. 30,135. (See 3,808,895.)

D. 234,581, Carlton L. Koehler, COMBINED DEPTH AND PRESSURE GAUGE FOR SCUBA DIVERS, **filed** Sept. 10, 1981, D.C., C.D. Calif. (Los Angeles), Doc. 81 4706, *Carlton L. Koehler* v. *Undersea Industries, Inc.*

D. 251,205. (See 4,292,986.)

D. 251,638. (See 4,292,986.)

D. 255,028, Leer, Inc., PICK-UP TRUCK REAR PANEL, **filed** Nov. 5, 1981, D.C., E.D. Mich. (Detroit), Doc. 81-74114, *Leer, Inc.* v. *New Boston Fiberglass, Inc.*

D. 260,807, Gerald W. Moreland, HYDRO-THERAPY NOZZLE FOR HYDRO-THERAPY SPAS DESIGN, **filed** Oct. 5, 1981, D.C., C.D. Calif. (Los Angeles), Doc. 81 5199, *Gerald W. Moreland* v. *G/G Distributing & Development Co., Inc.*

PP2,816, Van Well Nursery, Inc., APPLE TREE, **filed** Sept. 24, 1981, D.C., E.D. Wash. (Spokane), Doc. C-81-573-JLQ, *Van Well Nursery, Inc.* v. *William Gamache, et al.*

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
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Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
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	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 573-5152 Ext. 222
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
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Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF January 9, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-23-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	12-18-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	3-02-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	11-14-80
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	10-06-80
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	5-20-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	6-26-80
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—VACANT ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	3-24-80
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	12-07-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	10-02-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	4-18-80
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	5-07-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	6-17-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	3-17-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	10-22-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	3-17-80

Expiration of patents: The patents within the range of numbers indicated below expire during January 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,163,865 to 3,167,777, inclusive

Plant Patents ..... Numbers 2,465 to 2,467 inclusive

REEXAMINATIONS

FEBRUARY 23, 1981

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination

B1 4,103,753 (2nd)

MANUALLY SHIFTABLE PLANETARY GEARSET

John William Holdeman, Muncie, Ind., assignor to Borg-Warner Corporation, Chicago, Ill.

Reexamination Request No. 90/000,014, Jul. 1, 1981.

Reexamination Certificate for Patent No. 4,103,753, issued Aug. 1, 1978, Ser. No. 762,371, Jan. 25, 1977.

Continuation of Ser. No. 621,194, Oct. 9, 1975, abandoned.

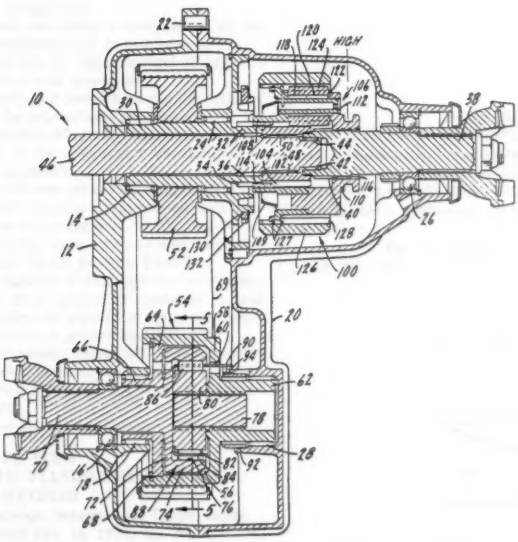
Int. Cl.[3] F16H *3/44*; B60K *17/34*

U.S. Cl. 180/247

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–17 is confirmed.

6. A planetary gear assembly comprising a sun gear, and a sub-assembly, said sub-assembly including a carrier, a ring gear, and a plurality of planet gears rotatably supported by said carrier in meshing relationship with said sun and ring gears, said sub-assembly being movable relative to said sun gear between a first position wherein said carrier is engaged with said sun gear for rotation therewith and said ring gear is not grounded, and a second position wherein said carrier is not engaged with said sun gear and said ring gear is grounded.



REISSUES

FEBRUARY 23, 1982

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,869

METHOD OF OPERATING A REFRIGERATION PLANT AND A PLANT FOR PERFORMING THE METHOD

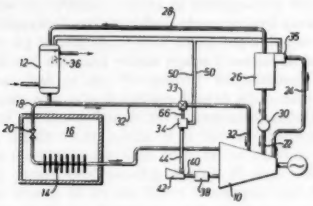
Lauritz B. Schibbye, Algvagen, Sweden, assignor to Svenska Rotor Maskiner Aktiebolag, Nacka, Sweden

Original No. 3,811,291, dated May 21, 1974, Ser. No. 314,993, Dec. 14, 1972. Application for reissue Oct. 5, 1979, Ser. No. 82,422

Claims priority, application United Kingdom, Dec. 28, 1971, 60274/71

Int. Cl.[3] **F25B** *43/02*

U.S. Cl. 62—192 **7 Claims**



3. A refrigeration plant comprising:

a refrigerant flow circuit including a compressor of the screw rotor type, a condenser and an evaporator;

means for circulating oil and for injecting said oil into the compression chambers of said compressor;

an oil separator provided in said circuit between the outlet of said compressor and the inlet of said condenser;

means for introducing liquid refrigerant into a circuit portion between the inlet of the compressor and the inlet of said oil [seperator] *separator;*

means responsive to at least one parameter indicative of the difference between the temperature in the oil separator and the temperature in the condenser;

adjustable means for varying the quantity of liquid refrigerant introduced into said circuit portion; [and]

means for controlling the capacity of the compressor, said capacity controlling means being operatively connected to said adjustable means to reduce the quantity of liquid refrigerant introduced during operation at partial capacity; and

means connecting said responsive means with said adjustable means to control said adjustable means such that said temperature difference is kept small but is prevented from dropping down to zero.

Re. 30,870

ELECTROMAGNETIC FLUIDICS SYSTEM AND METHOD

Kiyoshi Inoue, 3-16-8 Kamiyoga, Setagaya-ku, Tokyo, Japan

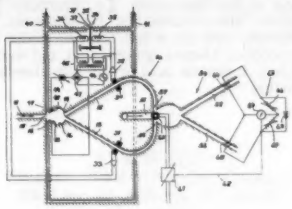
Original No. 3,494,369, dated Feb. 10, 1970, Ser. No. 608,476, Dec. 19, 1966. Application for reissue Oct. 21, 1971, Ser. No. 191,553

Claims priority, application Japan, Dec. 21, 1965, 40/79186; Dec. 27, 1965, 40/80677; Dec. 27, 1965, 40/80678

Int. Cl.[3] **F17D** *1/16;* **F15C** *1/08, 1/14*

U.S. Cl. 137—13 **14 Claims**

16. A method of operating a fluidics device having an inlet side provided with at least one inlet branch and an outlet side having a pair of outlet branches opening toward said inlet branch and separated by a fluid-flow splitter, comprising the steps of passing a stream of an electromagnetically susceptible liquid through said device from said inlet side to said outlet side; applying to the liquid stream passing through said device at said inlet side an electromagnetic field of a strength sufficient to deflect said stream at least partly into one of said outlet branches; electrically detecting at least one flow parameter of the liquid stream passing through said outlet side; and electrically controlling the electromagnetic field in response to the electrically detected flow parameter



wherein said liquid stream is rendered electromagnetically susceptible by admixing therewith magnetically permeable particles entrainable by said liquid, and wherein said electromagnetic field is a magnetic field applied in the plane of liquid flow and across said liquid stream.

Re. 30,871

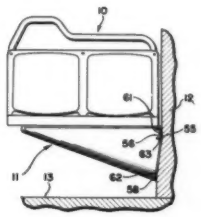
CANTILEVERED SUPPORTING SHELL FOR SEAT

Arthur J. Harder, Jr., Franklin Park, Ill., assignor to Coach and Car Equipment Corporation, Elk Grove Village, Ill.

Original No. 4,120,533, dated Oct. 17, 1978, Ser. No. 801,842, May 31, 1977. Application for reissue Oct. 12, 1979, Ser. No. 84,167

Int. Cl.[3] **B60N** *1/00;* **A47C** *3/12*

U.S. Cl. 297—451 **22 Claims**



1. Structure for supporting a seat in cantilevered relation to a wall, said structure comprising:

a *cantilevered* rigid, trough-shaped, structural, exterior skin;

said trough-shaped skin having an outer end and an open inner end;

means for mounting said inner end of said trough-shaped skin on said wall;

and means for mounting a seat atop said trough-shaped skin *with the front and back of said seat disposed transversely to said wall;*

said rigid, structural, exterior skin comprising means for providing cantilevered support to said seat.

Re. 30,872

PROCESS FOR PRODUCING 2-KETO-L-GULONIC ACID

Takayasu Sonoyama, Sakai; Bunji Kageyama, Ibaraki, and Tahiko Honjo, Minoo, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Original No. 3,922,194, dated Nov. 25, 1975, Ser. No. 452,656, Mar. 19, 1974. Application for reissue Jan. 22, 1980, Ser. No. 114,252

Claims priority, application Japan, Mar. 22, 1973, 48-32842

Int. Cl.[3] C12P 7/60

U.S. Cl. 435—138 14 Claims

1. A process for producing 2-keto-L-gulonic acid or a salt thereof which comprises; contacting a 2-keto-L-gulonic acid producing strain selected from microorganisms which belong to the genera of Brevibacterium, [Arthrobacter,] Bacillus, Staphylococcus, Micrococcus and Pseudomonas, with 2,5-diketo-D-gluconic acid or a salt thereof, under conditions sufficient to produce 2-keto-L-gulonic acid, and recovering the produced 2-keto-L-gulonic acid or any salts thereof from the resultant mixture.

PROCESS FOR PRODUCING 2-KETO-L-GULONIC ACID

Takayasu Sonoyama, Sakai; Bunji Kageyama, Ibaraki, and Tahiko Honjo, Minoo, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

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PLANT PATENTS

GRANTED FEBRUARY 23, 1982

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,826

POMEGRANATE TREE

James M. Dutton, 1043 Highland Ave., Visalia, Calif. 93277

Filed Nov. 5, 1979, Ser. No. 91,335
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—33 **1 Claim**

1. A new and distinct variety of pomegranate tree, substantially as illustrated and described, characterized particularly as to novelty by its bearing of fruit which has a deeper red color of its rind and arils and which ripens from seven to ten days earlier than fruit of the "Wonderful" (unpatented) variety of pomegranate tree, which matures four to seven days later than the fruit of the Early Wonderful pomegranate tree (U.S. Plant Pat. No. 3,520) from which it is further distinguished by blooming from mid April to July 1st as contrasted with a blooming period commencing March 22 and reaching full bloom by March 30 for the Early Wonderful and by smaller leaves than the Early Wonderful and which new variety has a substantially higher acid content than fruit of the Granada variety of pomegranate tree (U.S. Plant Pat. No. 2,618) or the Early Red variety (U.S. Plant Pat. No. 2,723) which varieties the fruit of the subject variety most nearly resembles in appearance.

4,827

PEACH TREE

Yutaka T. Takanishi, 10148 S. Petersen, Reedley, Calif. 93654

Filed Jun. 13, 1980, Ser. No. 159,301
Int. Cl.[3] A01H *5/03*
U.S. Cl. Plt.—43 **1 Claim**

1. A new and distinct variety of peach tree, substantially as illustrated and described, which is generally similar in tree and fruit to the Springcrest variety, but distinctively characterized, in comparison, by fruit which ripens, for harvest, seven to ten days earlier.

PATENTS

GRANTED FEB. 23, 1982

ERRATA

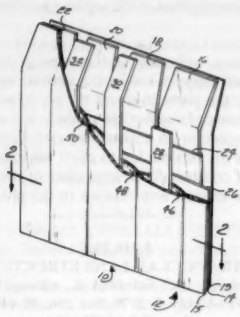
For CLASS	See PATENT NO.
198–347	4,316,754
376–175	4,316,770
376–415	4,316,771
424–269	4,316,932
422–186	4,317,044
372–050	4,317,085
372–049	4,317,086
372–057	4,317,087
372–092	4,317,088
372–094	4,317,089
372–058	4,317,090

PATENTS

GRANTED FEBRUARY 23, 1982

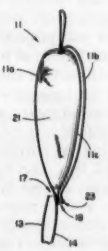
GENERAL AND MECHANICAL

4,316,286
BULLETPROOF PROTECTIVE PLATE ASSEMBLY
John M. Klein, 1754 Grant, Birmingham, Mich. 48009
Filed Mar. 7, 1980, Ser. No. 128,267
Int. Cl.[3] F41H *1/02*
U.S. Cl. 2—2.5 **9 Claims**



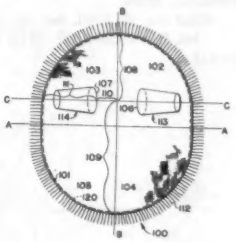
1. A protective plate assembly comprising:
a plurality of first plates having contiguous first and second portions, said second portion being disposed at a predetermined angle with respect to said first portion such that said first plates closely conform to the shape of the torso of a human being along the vertical plane of the body of the wearer;
said first portions of said first plates being disposed in edge-to-edge relationship in a common plane;
certain of said second portions of said first plates having at least one lateral edge thereof disposed at an obtuse angle with respect to the contiguous edge of said first portion of said plate to permit said first plates to rotate freely about the adjoining edges of said first portions without interference between the edges of said second portions of said first plates such that said protective plate assembly closely conforms to the shape of the body of the wearer along a horizontal plane;
a plurality of second plates disposed in overlapping relationship over the adjoining edges of said first plates; and
an enclosure housing said first and second plates and maintaining said first and second plates in the desired position.

4,316,287
CHILD'S LOUNGING GARMENT
Barbara A. Rule, 4416 Dunn, Lawrence, Ind. 46226
Filed Jun. 4, 1980, Ser. No. 156,502
Int. Cl.[3] A47G *9/08*; A41D *11/00*
U.S. Cl. 2—69.5 **2 Claims**



1. A child's lounging garment comprising a fabric envelope shaped to resemble a fanciful figure, said envelope having a central body portion and side extending arm portions to accommodate the wearer's arms, a head portion extending from the top margin of said body portion of the envelope and containing cushioning material to adapt the head portion for use as a headrest pillow, a transverse slit in the envelope front adjacent the junction of the head portion with the envelope to permit the wearer's head to extend to the exterior of the envelope and to overlie said head portion when the wearer is reclining, said head portion including an integral storage pocket to accommodate the folded body portion of the garment, said head portion of said envelope being formed by a front panel a rear panel and an intermediate sub panel with said cushioning material interposed between said front and intermediate panels, said head portion being provided with a first opening between said front panel and said intermediate panel permitting withdrawal of said cushioning material for cleaning, and a second opening between said intermediate panel and said rear panel providing entry to said storage pocket accommodating the folded body portion of the garment during storage or transport.

4,316,288
INVERTIBLE OUTERWEAR GARMENT
Mary J. Henrickson, 2839 Starbrook Dr., Charlotte, N.C. 28210
Filed Oct. 6, 1980, Ser. No. 194,005
Int. Cl.[3] A41D *3/08*
U.S. Cl. 2—88 **9 Claims**



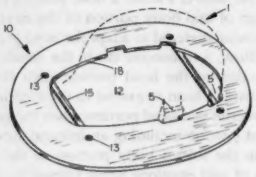
1. An article of clothing adapted for use as an outerwear garment and comprising:
a fabric portion of generally elliptical shape and having a length along a first axis greater than a length along a second axis, said fabric being symmetrical about said first and said second axis, whereby said fabric portion is divided into four imaginary quadrants of substantially equal areas comprising first, second, third, and fourth quadrants by said axes;
first and second armholes through said fabric, said first armhole being completely within said first quadrant, and said second armhole being completely within said second quadrant; and
said first and second armholes are equidistant from said first axis and are positioned within said first and said second quadrants, respectively, to provide a user with a full-length outerwear garment with said garment worn in a first manner such that said third and said fourth quadrants are positioned at the bottom of said garment, and to further provide said user with a shorter length outerwear garment with said garment worn in a reversed manner from said first manner and with said first and said second quadrants being positioned at the bottom of said garment.

4,316,289

SUN SHIELD FOR A HARD HAT

Melvin O. Hild, 923 W. 15th St., Grand Island, Nebr. 68801

Filed Apr. 7, 1980, Ser. No. 138,056
Int. Cl.³ A42B 1/20, 3/00
U.S. Cl. 2—191 4 Claims



1. A sun shield adaptor to cooperate with protective headgear, such as hard hats, wherein the sun shield comprises:

a sheet of plastic of a rigidity and thickness sufficient to protect the wearer from falling particles and debris having a generally oval configuration extending said protection about all sides of the wearer's person; and

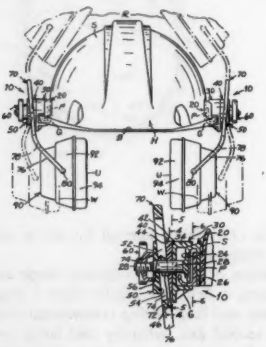
a centrally disposed aperture having a plurality of recesses which frictionally engage external projections on a hard hat at the approximate intersection with the upper side of the hard hat's brim brim.

4,316,290

EAR MUFF ACCESSORY FOR SAFETY HARD HAT

Edward N. Montesi, Barrington, R.I., assignor to Norton Company, Worcester, Mass.

Filed Jul. 18, 1980, Ser. No. 170,192
Int. Cl.³ A42B 3/00; A41D 21/00
U.S. Cl. 2—423 11 Claims



1. A device for mounting a hearing protector on each of the opposite sides of a safety hard hat and resiliently pressing the hearing protectors at a substantially non-adjustable constant force into engagement with areas about the ears of an individual comprising:

a support including

an end portion adapted for attachment to one of the opposite sides of the hard hat and a pivot stud extending axially outwardly from the end portion to an opposite outer fastener end portion thereof,

a support arm mounted about and adjustable relative to the pivot stud and having

a supporting end portion at one end thereof including

a central rigid portion extending inwardly from an outer end to an opposite inner end thereof and

an elongated slot in the central portion through which the pivot stud passes and is adjustable relative thereto;

at least one flexible resilient leg connected to and extending from a junction with the central rigid portion to an opposite free end portion thereof adapted for attaching a hearing protector thereto at a predetermined non-adjustable fixed distance from the junction and resiliently pressing a hearing protector at a substantially non-adjustable constant force into engagement with areas about the ear of an individual regardless of changes in position of the support arm on the pivot stud; and

clamping means on the fastener end portion of the pivot stud for releasing, adjusting and clamping the central rigid portion and support arm in the desired adjusted position relative to the pivot stud and the ear of an individual

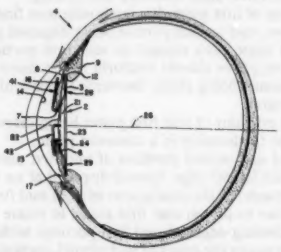
whereby flexing of the flexible resilient leg and an attached hearing protector to a given wearing position about the ear causes the flexible leg to exert substantially the same amount of constant force regardless of the adjusted position of the support arm relative to the pivot stud.

4,316,291

INTRAOCULAR LENS STRUCTURE

Stanford L. Severin, 1313 Solano Ave., Albany, Calif. 94706

Filed May 3, 1979, Ser. No. 35,445
Int. Cl.³ A61F 1/16
U.S. Cl. 3—13 17 Claims



1. An intraocular artificial lens assembly for surgical implantation in the posterior chamber of a human eye the iris and pupillary opening of which are coaxially symmetrical about the anterior-posterior axis of the eye, comprising:

(a) a lens member having a posterior surface including a posterior pole, an interior surface including an anterior pole, an equatorial surface disposed between said posterior and anterior surfaces, said posterior and anterior surfaces being substantially symmetrical with respect to an optical axis including said posterior and anterior poles, a generally centrally disposed optically active portion of predetermined minimum transverse dimension correlated to the pupillary opening, and an annular peripheral portion circumscribing said optically active portion;

(b) at least five separate support means separately mounted on said lens member and projecting radially outwardly past said equatorial surface so as to leave substantial portions of said equatorial surface unobstructed;

(c) at least four of said five separate support means comprising generally U-shaped support loops, each support loop including a pair of spaced legs merging smoothly at one end into an integral curved portion common to both legs of the pair of spaced legs, said integral curved portion lying radially outwardly spaced from said equatorial surface, said spaced legs at their opposite ends being fixed to said lens member in circumferentially spaced relationship;

at least two of said separate support means being mounted on said lens member in a plane perpendicular to said optical axis and arranged to engage selected posterior surfaces of the iris and the remainder of said separate support means

being mounted on the anterior surface of said lens member and converging toward said plane to engage selected anterior surfaces of the iris;

said separate support means mounted on the anterior surface of said lens member each having at least one integral support portion embedded in said lens member and extending from the anterior surface in the direction parallel to said optical axis so that said anterior separate support means are spaced from the anterior surface of said lens member, whereby said lens member is adapted to be suspended on the iris with said annular peripheral portion of said lens member and said posterior support means engaging the posterior surface of the iris, with said anterior support means engaging the anterior surface of the iris, and with the integral support portions of said anterior support means adapted to engage the peripheral surface of the pupillary opening in the iris so that the optical axis of the lens member coincides with the anterior-posterior axis of the eye.

4,316,292

ARTIFICIAL CRYSTALLINE LENS

Boris N. Alexeev, Bolshoi Tatarsky pereulok, 4, kv. 88, Moscow, U.S.S.R.

Filed Nov. 9, 1979, Ser. No. 92,832
Int. Cl.³ A61F *1/16, 1/24*
U.S. Cl. 3—13 **5 Claims**

4. In an artificial crystalline lens adapted for being implanted in a patient's eye and comprising a lens and fastening and supporting elements held to the lens on diametrically opposite edge portions of the lens lateral surface, said elements being adapted for setting said lens in the crystalline capsule of the patient's eye, the improvement comprising the fastening element being a wire angle held to the lens lateral surface in such a manner that its vertex lies on a line passing through the lens circumference, and said supporting element being held to the lateral lens surface and being spread along the lens periphery and made of an elastic wire so as to be radially displaceable in order to adjust the distance from the lens centre to the supporting wire element to suit the size of the crystalline capsule of the patient's eye, the supporting element having a midpoint lying on a common line with the vertex of the wire angle, the common line passing through the midpoint of the lens, the wire angle being curved, near its vertex, so as to define an elbow bend having a first arm normal to legs of the wire angle, and a second arm thereof normal to the first arm of the elbow bend and lying in a plane containing the apex of the lens.

4,316,293

FLEXIBLE INTRAOCULAR LENS

Jon H. Bayers, 2935 Bechelli La., Suite C, Redding, Calif. 96001

Continuation-in-part of Ser. No. 70,034, Aug. 27, 1979, Pat. No. 4,257,130. This application Mar. 6, 1981, Ser. No. 241,205
Int. Cl.³ A61F *1/16, 1/24*
U.S. Cl. 3—13 **13 Claims**

1. An intraocular lens for placement within an eye comprising:

a. a lens portion having an optical axis for placement adjacent one side of the iris;

b. at least one appendage, said at least one appendage being fastened to said lens portion and including a loop, terminating with an outer end, having a first portion fastened to said lens portion, and a second portion connected to said first portion and intended for extending therefrom along a side of the iris into contact with the extreme periphery of the eye with said outer end;

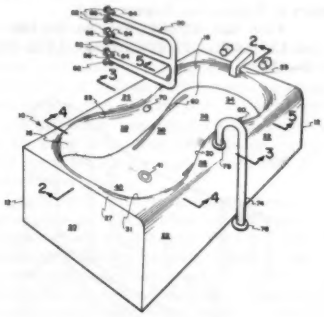
c. means for restricting flexure of said loop vertically inwardly or outwardly in relation to the plane of the iris while allowing lateral flexure generally normal to said optical axis in response to forces directed to said outer end along said eye periphery.

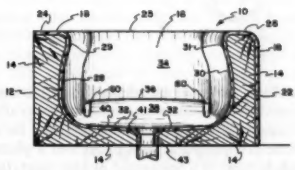
4,316,294

BATHTUB

Naomi G. Baldwin, Arcadia, Utah 84012

Filed Feb. 8, 1980, Ser. No. 119,736
Int. Cl.³ A47K *3/022, 3/12*
U.S. Cl. 4—538 **9 Claims**





1. A bathtub comprising:

main body means comprising wood insulation means and an exposed exterior;

the exterior comprising a water receiving well and an impervious surface;

the well comprising opposed peanut-shaped generally vertical sidewalls and an area between the sidewalls, said region being continuous and comprising seriatim a substantially vertical front end wall, a generally horizontal but

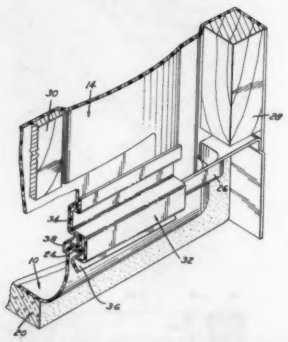
slightly crested front bottom area spanning on the order of one-third the horizontal length of the well contiguously receiving and supporting the calves and feet of any sized user in an elevated posture, an intermediate bottom area smoothly merging with the front bottom area and spanning on the order of about the middle one-third of the horizontal length of the well contiguously receiving and supporting the thighs of the user, the intermediate bottom area gradually increasing the depth of the well to its maximum, the maximum depth comprising a concave sitting site contiguously receiving and supporting the buttocks of the user and an inclining combination bottom and rear wall area spanning on the order of about one-third the horizontal length of the well and gradually decreasing the depth of the well from its maximum at the sitting site where the combination bottom and rear wall area joins the intermediate bottom area to a location having zero depth, the combination bottom and rear wall area contiguously receiving and supporting the back, shoulders and head of the user; wherein the front bottom are comprises a slightly crested standing region for showering, and the intermediate bottom and combination bottom and rear wall areas descending to from a concave region accommodating receipt of the massive part of the body of any sized person and further comprising exposed gravity drain means accommodating flow of water down shallow indentations or grooves near the sidewalls of the showering region into the concave region thus preventing puddling of water and the forming of slick spots, and wherein the sidewalls comprise elevated inwardly directed anti-splash lips.

4,316,295

BATHING ENCLOSURE

Thomas M. Whitney, and Gerald Gower, both of Lapeer, Mich., assignors to Trayco, Inc., Lapeer, Mich.

Filed Mar. 31, 1980, Ser. No. 136,145
Int. Cl.[3] **A47K** *3/23;* **E04B** *1/343;* **A47B** *47/04*
U.S. Cl. 4—612 **1 Claim**



1. In a bathing enclosure kit adapted to be packaged and sold in a knocked-down condition as a series of generally flat panels for on-site assembly into a multiple-sided stall shower or bath tub enclosure comprising a base panel and a plurality of side panels, each formed of a semi-rigid plastic sheet, the improved joint construction for assembling such panels wherein:

the base panel is a single unitary generally pan-shaped sheet with a generally horizontal planar bottom portion and upwardly turned side walls at all of its lateral edges, the upper portions of said sidewalls having a narrow horizontally and outwardly extending ledge and a generally vertical flange extending upwardly therefrom, said ledge and said flange extending around the periphery of said base panel at least in the areas that are adapted to interlock with the lower portions of the side panels;

the lower portions of each of the side panels having a locking strip bonded to the outer surface thereof at an elevation spaced above the lower ends of each of said side panels and said locking strips, the lower end of said side panel adapted to extend inside of said base panel side wall ledge and to an elevation below that of said ledge so as to conceal it from normal view and aid in preventing water from splashing over the base panel side wall flange, said locking strip having a ledge extending generally horizontally and outwardly from an elevation below that of said bonding area and adapted to normally engage and seat upon the upper edge of said vertical flange of the base panel side wall, and said locking strip further having a locking flange extending downwardly and inwardly from said locking strip ledge on the outer and under side of the vertical flange and ledge, respectively, of the base panel side wall, said locking flange being capable of resiliently yielding outwardly to permit said locking flange to clear said base panel side wall during downward assembly of the side panel onto the base panel, and said locking flange snapping back into its normal position at the completion of assembly to interlock with the underside of said ledge of the base panel side wall;

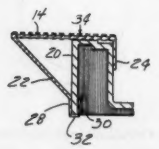
whereby the side panels are assembled to the base panel without the need for any supplementary fasteners.

4,316,296

WASH BASIN ATTACHED SHELF

Vincent M. Lubin, 1064 Brooklawn Ct., Troy, Mich. 48084

Filed Aug. 23, 1979, Ser. No. 69,226
Int. Cl.[3] **E03C** *1/00;* **A47L** *19/02;* **F16B** *2/20*
U.S. Cl. 4—630 **2 Claims**



1. A shelf attachable to wash basins which include a vertical apron at the perimeter thereof comprising:

the shelf made from a single continuous piece of material and including;

a planar horizontal wall overlaying a rim of the basin including a ridged upper surface and a ridged lower surface said upper surface covered with a soft resilient material to prevent slipping of articles placed thereon and to stiffen the horizontal wall;

the ridges disposed transversely and inclined toward the bowl; to drain the shelf into the bowl

a generally planar downward and inward extending wall integral with and extending from an outer edge of the horizontal surface abutting the apron at a lower end thereof to provide support for the upper surface

means for attaching a lower end of the downward and inward extending wall to the apron comprising a clip including a first leg formed by a downward extending wall bent inward along a lower edge of the apron, with an upward extending second leg formed by bending the clip upward to abut an inner surface of the apron, an upper edge of the clip bent inward a distance to aid in engaging the apron lower edge, the clip snugly engaging the apron between legs;

a bowl engaging wall integral with an inner edge of the horizontal surface extending downward abutting the bowl;

said bowl engaging wall squeezing the bowl at the inner edge and at the apron and positioning the shelf at an edge of the bowl;

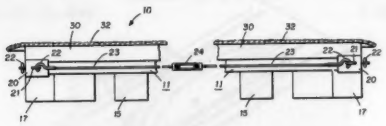
the shelf walls integrally formed of a single continuous planar piece with all portions having an elongated horizontal planar dimension; and whereby the shelf is retained to the basin by the bowl engaging wall abutting the bowl and the downward and inward extending wall affixed to the apron with the shelf attachable to the bowl and removable from the bowl for cleaning without alteration of the bowl.

4,316,297

TUMBLING FLOOR

John K. Geist, Cedar Rapids, Iowa, assignor to Nissen Corporation, Cedar Rapids, Iowa

Filed Apr. 14, 1980, Ser. No. 140,211
Int. Cl.[3] A47G *9/00;* **A63B** *5/18*
U.S. Cl. 5—420 **4 Claims**



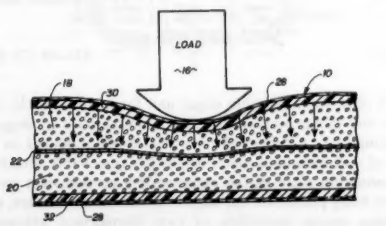
1. A floor for tumbling and the like comprising: a plurality of rigid cushioning panels having opposite bottom and top faces, each of the cushioning panels having a plurality of discrete pieces of cushioning material spaced over its bottom face in order to support the panel in parallel spaced position above a hard underlying surface, the dimensions and distribution of said pieces over said panel face providing a co-efficient of restoration for the panel in the range of about 40 to 50 percent in order to primarily cushion rather than rebound a performer landing upon the panel top face, the cushioning panels being assembled in abutting relation on said underlying surface to provide a large uniform surface formed by the panel top faces; means to maintain the cushioning panels in said abutting relation; and a plurality of abutting springing panels of springing material disposed upon and covering the panel top faces, said springing material having a co-efficient of restoration in the range of about 90 to 98 percent in order to primarily rebound rather than cushion a performer landing upon the springing panels.

4,316,298

COMPOSITE MATTRESS SYSTEM

Joseph L. Russo, and Richard Sonder, both of New York, N.Y., assignors to Thonet Industries, Inc., York, Pa.

Filed Mar. 12, 1980, Ser. No. 129,620
Int. Cl.[3] A47C *27/22, 27/15, 31/08*
U.S. Cl. 5—465 **14 Claims**



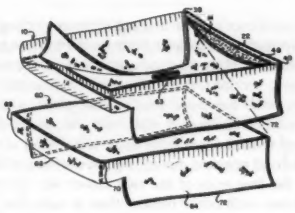
9. A flexible composite pad adaptable for use in a mattress or upholstery assembly and otherwise adapted for extensive bending by providing minimum thickness without sacrificing comfort, said pad being frameless and generally rectangular and including an upper layer of foamed elastomeric material of relatively low HR density rating between substantially **17** and **27** and a lower layer of similar shape of foamed elastomeric material of relatively low HR density rating similar to said upper layer, a mesh layer of flexible relatively inelastic synthetic resin fibers coextensive in size with said upper and lower layers and disposed there between, and cement means integrally bonding said layers to each other and bonding said mesh to said layers permanently throughout the areas thereof in laminated assembly to distribute concentrated loads laterally to an area greater than such type of load by transmitting some of the compression of the upper layer to the lower layer by means of the distributing effect of the mesh layer securely bonded thereto, whereby said distribution of compression of said layers minimizes or prevents said pad from bottoming out.

4,316,299

FITTED BED COVERING

Naomi P. Friedman, 200 Winston Dr., Cliffside Park, N.J. 07010

Continuation-in-part of Ser. No. 5,657, Jan. 22, 1979, abandoned. This application Feb. 29, 1980, Ser. No. 125,838
Int. Cl.[3] A47G *9/02, 9/04*
U.S. Cl. 5—485 **4 Claims**



1. A covering for a bed comprising

first and second generally rectangular pieces of flexible material, each defining a peripheral edge, said first and second pieces of material each having two adjacent contoured corners, two adjacent non-contoured corners, and two slits extending transversely from its peripheral edge, each slit being located closely adjacent one contoured corner between said contoured corner and the adjacent non-contoured corner;

means for releasably securing said first and second pieces of material together with said first piece of material in overlapping relation with said second piece of material; and

a third generally rectangular piece of flexible material defining a peripheral edge, the length and width of said third piece of material being substantially the same as the length and width of said bed, respectively, said third piece of material being disposed in confronting relation with said first piece of material and joined thereto along three sides of its peripheral edge with the fourth unjoined side of its peripheral edge confronting the central portion of the peripheral edge of said first piece of material between said non-contoured corners, thereby defining a pocket between said third piece of material and the confronting portion of said first piece of material.

4,316,300

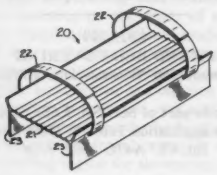
SWIM PADDLES

W. Denison Lewis, 176, Vidal St. S., Apt. 606, Sarnia, Ontario, Canada (N7T-2T6)

Filed May 8, 1980, Ser. No. 147,567
Int. Cl.[3] B63B *31/12*
U.S. Cl. 9—307 **1 Claim**

1. A pair of swim paddles which facilitate swimming constructed to be worn on the forearms of a swimmer, each swim paddle having a length substantially equal to and a width greater than that of the swimmer's forearm, whereby to increase the effective area thereof and correspondingly increase his speed of movement through the water; each swim paddle

made of a flexible material having a bottom portion and a pair of side portions, said bottom portion being formed with a fluted friction-gripping surface which grips the underside of the swimmer's forearm to assist in holding the swim paddle in place during use thereof, each side portion having an upper section which projects above said bottom portion and a lower section which projects below said bottom portion, said two lower side sections forming a water scoop with said bottom portion, a pair of straps for holding each swim paddle in place



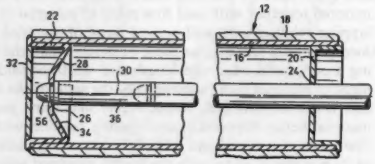
on the swimmer's forearm, each strap encircling the forearm of the swimmer and extending across the bottom portion beneath the bottom surface thereof and through the wall of the two lower side sections, the water scoop formed by the two lower side sections, having a first at rest position during a retract stroke of the swimmer in which the two lower side sections are disposed spaced apart from each other, said water scoop having a second position during a power stroke of the swimmer in which the free ends of the two lower side sections are spread apart from each other further than in said first position.

4,316,301

PAINT ROLLER ASSEMBLY

Morley L. Smith, Beaconsfield, and Gad Shaanan, Montreal, both of Canada, assignors to T. S. Simms & Co. Limited, Saint John, Canada

Filed Mar. 28, 1980, Ser. No. 134,912
Int. Cl.³ B05C *17/02*
U.S. Cl. 15—230.11 **3 Claims**



1. A paint roller assembly comprising,

(a) a metal frame which is bent upon itself to provide a handle mounting leg portion and an elongated shaft portion having one end joining said handle portion, the frame being made of hollow tubular material, whereby to provide simultaneously a lightweight and rigid frame.

(b) a plug mounted in and closing the other end of the shaft portion of the frame, and having a head portion extending away from the shaft portion and tapering down from about the diameter of the shaft portion to a smaller diameter, and the plug having a neck portion located between the head portion and the shaft portion and of smaller diameter than the shaft portion; and

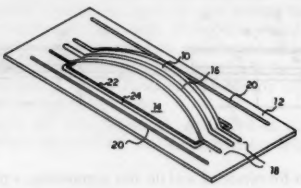
(c) a roller having a tubular sleeve, first and second bearing members mounted in opposite ends of the sleeve, the first bearing member having a first bearing passage sized to receive the shaft portion of the frame, and the second bearing member having a socket portion extending inwardly from the sleeve and having a second bearing passage smaller in diameter than the diameter of the shaft portion and sized to fit into said neck portion, the collar being sufficiently flexible to expand and let the head portion of the plug be forced therethrough, whereby the plug serves to removably retain the second bearing member on the hollow shaft.

4,316,302

TROWEL

Ronald M. Clark, 105 Factory, Addison, Ill. 60101

Filed Mar. 14, 1980, Ser. No. 130,469
Int. Cl.³ B05C *17/10*
U.S. Cl. 15—235.4 **9 Claims**



1. A hand trowel comprising

a blade portion having a substantially flat lower surface and four edges; and

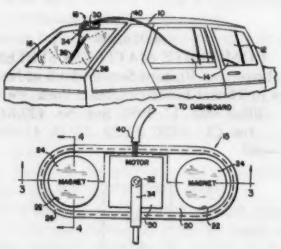
a longitudinally arcuate handle portion integrally formed at its ends with the upper surface of said blade portion, extending outwardly from said upper surface, and having a first reinforcing ridge integrally formed therein substantially along the longitudinal centerline thereof and extending onto the upper surface of said blade portion.

4,316,303

AUXILIARY WINDSHIELD AND WINDOW WIPER

Silas Penn, 5316 Sheridan, Detroit, Mich. 48213

Filed Apr. 3, 1980, Ser. No. 136,895
Int. Cl.³ B60S *1/08*
U.S. Cl. 15—250.3 **4 Claims**



1. A removable portable wiper unit for motor vehicle, said wiper unit comprising an elongated substantially rectangular mounting plate, a rubber-like marginal frame mounted on the edge of said mounting plate, means for removably attaching said mounting plate to the exterior of a portion of a motor vehicle body proximate the edge of a transparent surface, said attaching means consisting of two intersurface adherence means each disposed proximate an end of said mounting plate between said mounting plate and said body surface, an electric motor mounted on said mounting plate between said attaching means and having a rotatably reciprocable drive shaft extending substantially perpendicular to said mounting plate, a windshield wiper support arm mounted on one end of said shaft, a windshield wiper blade mounted on the other end of said arm,

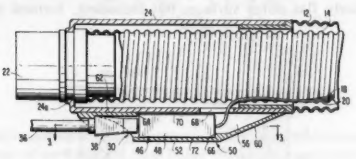
and means for controllably connecting said electric motor to the electrical system of said motor vehicle, wherein said means for connecting said electric motor to the electrical system of said motor vehicle comprises an electric cable, an electrical contact plug on the end of said cable for engagement in a cigarette lighter socket, and an electrical on-off switch connected in said electrical cable.

4,316,304

DOUBLE DISCONNECT, WATERPROOF ELECTRICAL CONNECTOR ASSEMBLY FOR ELECTRIFIED VACUUM HOSE FOR WET/DRY VACUUM CLEANER

Carl Parise, and Rainer R. Schulz, both of Reno, Nev., assignors to Parise & Sons, Inc., Sparks, Nev.

Filed Sep. 4, 1980, Ser. No. 183,798
Int. Cl.³ A47L *9/28*
U.S. Cl. 15—339 **3 Claims**



1. In an electrified wet pick up vacuum hose assembly for vacuum coupling of a vacuum pick up head to a dirty water accumulation tank for a wet/dry vacuum extraction machine, and wherein the vacuum pick up head carries an electrical motor driven scrubber assembly for scrubbing of the surface being cleaned adjacent the area of dirty water vacuum pick up, said hose assembly being comprised of concentric inner and outer flexible hoses connected at opposite ends to tubular couplings, insulated electrical wires carried by the vacuum hose assembly between the flexible hoses for connecting an electrical source at the water accumulation tank and the hose assembly to the electrical motor at the vacuum head end, the improvement comprising:

a double disconnect electrical connector mounted to the vacuum hose assembly adjacent the vacuum head end thereof,

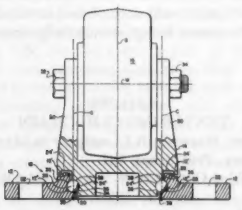
said double disconnect connector including receptacle means bearing axially slidable, spring biased first and second contacts for effecting an initial, first disconnection and means for sealing the area of said initial, first disconnection to the exterior of the hose assembly.

4,316,305

SWIVEL CASTER ASSEMBLY

F. Leo Seaford, Concord, N.C., assignor to Wil-Mat Corporation, Gastonia, N.C.

Filed Jun. 13, 1980, Ser. No. 159,010
Int. Cl.³ B60B *33/00*
U.S. Cl. 16—21 **7 Claims**



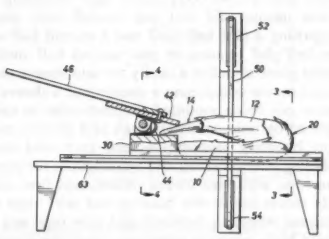
1. In a caster assembly of the type having a base member for affixation to a support member, a wheel assembly having a rotatable wheel for supporting a load for movement by rotation of said wheel, said ball bearing means solely supporting said wheel assembly on said base member in spaced relation thereto for rotational swiveling with respect thereto, said ball bearing means including respective generally arcuate raceway surfaces extending annularly on said base member and said wheel assembly in facing and spaced relationship to substantially circumferentially contact and retain ball bearing elements therebetween, the improvement comprising each said raceway surface having two generally arcuate end portions, one of said generally arcuate end portions being spaced from a cylindrical plane through the centers of said ball bearing elements and the other of said generally arcuate end portions intersecting and extending beyond said cylindrical plane, said raceway surfaces being arranged so that said intersecting end portion of each said raceway surface is oriented in facing, adjacent relation to said spaced end portion of the other raceway surface, whereby the spacing between said two raceway surfaces is offset from said cylindrical plane through said ball bearing elements.

4,316,306

METHOD AND APPARATUS FOR HOLDING THE PINCER CARRYING LEG OF A CRAB FOR SPLITTING THE LEG LONGITUDINALLY

Otto H. Huebotter, 4111 Floyd, Houston, Tex. 77007

Filed Aug. 18, 1980, Ser. No. 178,793
Int. Cl.³ A22C *29/02*
U.S. Cl. 17—52 **5 Claims**



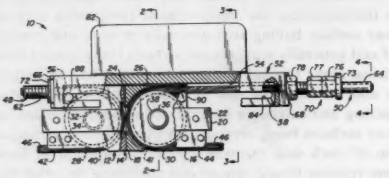
1. Apparatus for holding the type of pincer leg found on crabs of the blue or Dunginess type while the two sections of the leg are cut in half simultaneously along their longitudinal axes to expose the meat in the two sections of the leg for easy removal comprising parallel, spaced support members for engaging the outwardly tapered sides of the inner section of the crab leg and means for engaging the spaced grasping jaws of the pincers of the leg when the outer section of the leg is folded back along the inner section to hold the leg from turning on the support members as the leg is cut in half longitudinally, and means to resiliently hold the inner section in engagement with the support members and the grasping jaws of the pincers in engagement with the pincer jaws engaging means.

4. A method of cutting the type of pincer leg found on crabs of the blue and Dunginess type in half along the longitudinal axes of the two articulated sections of the leg to expose the meat in the two sections for easy removal, comprising the steps of holding the leg from movement in the direction of travel of the cutting blade and from movement laterally thereof, clamping the spaced jaws of the pincers in a plane generally transverse the plane of the cutting blade to hold the leg from rotation around its longitudinal axis, and moving the cutting blade through the leg toward the pincers until the blade moves into the space between the jaws of the pincers to complete the cut.

4,316,307
CONNECTOR FOR LOADED WIRE ROPE

George P. Hurst, 235 Hill St., Jackson, Calif. 95642

Continuation-in-part of Ser. No. 861,604, Dec. 19, 1977, which is a continuation-in-part of Ser. No. 763,188, Jan. 27, 1977, Pat. No. 4,078,298. This application Aug. 30, 1979, Ser. No. 71,222
Int. Cl.³ F16G 3/00; B01F 9/00
U.S. Cl. 24—31 R 5 Claims



1. A connector for securing end portions of a wire rope in an endless loop for bearing a load such as a drum, said connector comprising:

a first body piece;

a second body piece substantially identical to said first body piece;

means slidably connected with said first body piece and said second body piece for shifting said first and second body pieces relative to end portions of said wire rope, said shifting means including means for holding said end portions; and

bar means for splicing said first body piece to said second body piece;

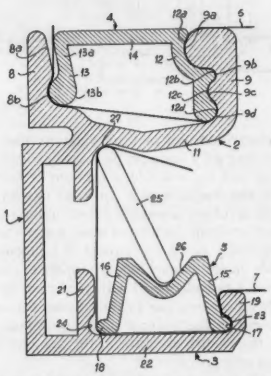
said first and second body pieces each including rotatable sheave means, said first and second body pieces each comprising a first half shell and a second half shell, said first half shell mating to said second half shell along a medial plane to define a cavity for said sheave means, said sheave means comprising a sheave and a sheave pin, said sheave pin being mounted perpendicular to said medial plane across said cavity through said sheave, said medial plane bisecting said sheave, and each said body piece including a recess along said medial plane for aligning said wire rope with said sheave means, said first and second body pieces for fixably bearing said wire rope such that frictional resistance between said wire rope and each one of said body pieces is minimized upon translation of said body pieces relative to said end portions.

4,316,308
RETAINING AND STRETCHING ELEMENT FOR A FILM SUPPORTING FRAMEWORK

Michel Chatelain, Annecy, France, assignor to Brave Trading Limited, Douglas, Isle of Man

Continuation of Ser. No. 886,713, Mar. 15, 1978, abandoned. This application Dec. 6, 1979, Ser. No. 100,803
Claims priority, application France, Mar. 28, 1977, 7710676
Int. Cl.³ A44B 21/00
U.S. Cl. 24—335 9 Claims

1. Retaining and tensioning element for a thin planar film including at least one elongated channel portion having a generally U-shaped cross-section provided with first and second flanks joined by a first core member, the first flank exhibiting a cross-section of sinuous internal profile, an elongated inverted channel member having a generally U-shaped cross-section provided with third and fourth flanks joined by a second core member, said core member having a bottom surface on the inside of said U-shaped inverted channel member, said third flank exhibiting a cross-section of sinuous external profile complementary to the internal profile of said first flank, said inverted channel member being dimensioned to be received within said channel portion, the film being respectively received and pinched between said first and third and second and fourth flanks upon assembly of said inverted channel member with said channel portion, wherein the internal profile of said first flank provides a rounded inwardly-projecting rib means proximate the open side of said channel portion for forming a first rounded knuckle surface means and the external profile of said third flank provides a groove means proximate said second core member for forming a second rounded knuckle surface means complementary in shape to said first rounded knuckle surface means for sliding on film extending across said first rounded knuckle surface means and thereby pivoting said channel member thereon during assembly of said channel members to pinch said film therebetween, and wherein said second flank exhibits a cross-section of internal profile which includes an insertion ramp sloping inwardly from the open side of said U-shaped channel portion followed by a curved locking groove projecting outwardly proximate said first core member and said fourth flank exhibits a cross-section of external profile which includes an elongated portion extending laterally away from said second core member, said elongated portion having a relatively flat outer surface, but including, formed at the



outer end thereof, proximate the open side of said inverted channel member, a locking-rib means protruding outwardly from said relatively-flat outer surface of said fourth flank, said locking rib being substantially laterally spaced from the bottom surface of said second core a distance at least as great as the thickness of the second core, said locking-rib means and said locking groove having approximately complementary curved surfaces, and said locking-rib means having the function of pinching said film between its surface and said insertion ramp during assembly of said channel members, and between its surface and said locking-groove surface once said channel members are assembled, wherein when said channel portion and said inverted channel member are fully engaged, with ends of said core of said inverted channel member being in an approximately horizontal attitude, said knuckle surface means of said inverted channel member is above the locking-rib means of said inverted channel member, with said knuckle surface means being proximate said core of said inverted channel, but said locking-rib means being substantially spaced from said core.

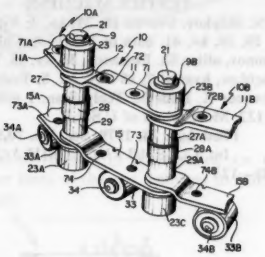
4,316,309
TENTERING CLIP CHAIN

Hans H. Richter, Warwick, R.I., assignor to Marshall and Williams Company, Providence, R.I.

Filed Oct. 9, 1979, Ser. No. 82,430
Int. Cl.³ D06C 3/04
U.S. Cl. 26—93 4 Claims

1. A tentering clip chain comprising a plurality of tenter clip bases pivotally connected together, each base comprising a horizontal upper bracket and a horizontal lower bracket, a first

bolt provided with a first set of five rollers consisting of an upper stress roller, an upper sprocket roller, an anti-tipping roller, a lower sprocket roller and a lower stress roller, means securing said bolt in said horizontal upper bracket and said horizontal lower bracket, a second bolt provided with a second set of five rollers consisting of an upper stress roller, an upper sprocket roller, an anti-tipping roller, a lower sprocket roller and a lower stress roller, means securing said second bolt in said horizontal upper bracket and said horizontal lower bracket, a horizontal upper bracket and a horizontal lower bracket of an adjacent base being pivotally connected to said



first bolt and a horizontal upper bracket and a horizontal lower bracket of an adjacent base being pivotally connected to said second bolt on the side of said base opposite to said first mentioned adjacent base, a plurality of web-retaining superstructures, one for each said plurality of tenter clip bases, said superstructures located intermediate each base and the bolts thereof, means fastening said superstructure, to the respective, horizontal upper bracket and horizontal lower bracket, said upper bracket and said lower bracket being separate entities joined solely through said first bolt and said second bolt passing therethrough.

4,316,310

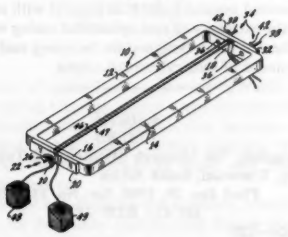
RAG RUG LOOM

Jackie F. Packham, 6905 Wisconsin Ave., La Mesa, Calif. 92041

Filed May 29, 1979, Ser. No. 43,450

Int. Cl.³ D03D *29/00*

U.S. Cl. 28—149 **1 Claim**



1. A portable rag rug loom consisting entirely of:

an integrally formed elongated closed loop frame of plastic material having a pair of laterally spaced longitudinally extending side members and a pair of laterally spaced transverse end members that have their opposite ends connected to the respective opposite ends of said longitudinally extending side members, said elongated closed loop frame having a length at least twice as long as it is wide, the height of said side members and said end members being substantially the same and there being no structure of said portable rag rug loom that extends upwardly above the top surface of said elongated closed loop frame;

a first transverse platen positioned adjacent one of said transverse end members and having means for tightening said first transverse platen into rigid surface contact with said transverse end member, said means comprising one bolt member passing through aligned bores in said respective end member and platen and having a nut threaded on its end: and

a second transverse platen positioned adjacent said other transverse end member and having means for tightening said second transverse platen into rigid surface contact with said transverse end member, said means comprising a pair of bolt members each of which passes through its own set of aligned bores in said respective end member and platen and each having a nut threaded on its end, the loom being adapted to receive at least two cords which extend over end members and between each end member and the associated platen so that when the platens are urged against the end members the cords are held firmly therebetween so as to extend parallel with the side members.

4,316,311

BOUNCE CRIMPING APPARATUS

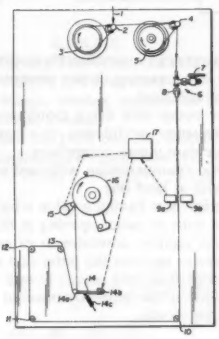
Philip C. Feffer, Silver Spring, Md., assignor to Chevron Research, San Francisco, Calif.

Division of Ser. No. 967,449, Dec. 7, 1978, Pat. No. 4,226,010.

This application Jun. 13, 1980, Ser. No. 159,412

Int. Cl.³ D02G *1/16, 1/12*

U.S. Cl. 28—248 **3 Claims**



1. In an apparatus for bounce crimp texturizing of thermoplastic yarn comprising a fluidized bounce crimp texturizer having a yarn outlet nozzle for discharging texturized yarn, in a loosely compacted form therefrom; yarn supply means for supplying yarn to said texturizer and means for collecting yarn discharged from said bounce crimp texturizer; wherein the improvement comprises:

(a) disposing between said outlet nozzle and said collecting means and in operative relationship to said texturized yarn a sensing means for sensing and generating a first signal when the thickness of said yarn disposed relative to said sensing means exceeds a predetermined thickness and a second signal when the thickness of said yarn is equal to or less than a second predetermined thickness;

(b) a controller means comprising a receiver means for receiving said signals from said sensing means and a control means for controlling the rate of yarn takeup on said collecting means wherein when said receiver means receives said first signal, said control means causes the rate of yarn takeup to increase, thereby increasing downstream tension on said yarn and correspondingly decreasing the thickness of said yarn sensed by said sensing device and wherein when said receiver means receives said second signal it activates said control means to reduce the rate of said yarn takeup thereby reducing downstream yarn tension and correspondingly increasing said yarn thickness whereby said yarn is discharged from said compacting outlet in a loosely compacted tensionless state and is not

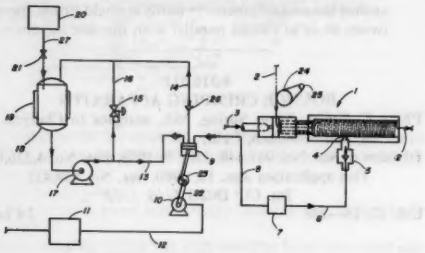
accumulated prior to being collected by said collecting means, thereby substantially reducing tangles.

4,316,312

APPARATUS FOR INTERMITTENT APPLICATION OF FLUID TO YARN AT A TEXTURING DEVICE

Dick C. Vermeer, Chester, and Raymond J. Biron, Colonial Heights, both of Va., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Sep. 19, 1980, Ser. No. 188,796
Int. Cl.[3] D02G 1/12, 1/16
U.S. Cl. 28—255 1 Claim



1. An apparatus to intermittently apply treating fluid to a wad of yarn in a texturing device comprising

a source of said fluid,

an injector pump with drive motor and an inverter drive with frequency modulation to create pressure on said fluid, injection means comprising

(a) tubing communicating with said source of said fluid and with at least one

(b) injection port having a valve which is a spring loaded nozzle with an outlet opening at the texturing device

(c) a flow control downstream of said means to create pressure to regulate the pulse rate and duration of said fluid flow from said source to said injection port

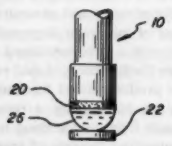
so that said fluid is intermittently injected onto said yarn wad at said texturing device.

4,316,313

METHOD OF FORMING A CATHODE AND INTEGRAL SPACER

Kenneth Speigel, Seneca Falls, N.Y., assignor to North American Philips Consumer Electronics Corp., New York, N.Y.

Filed Apr. 14, 1980, Ser. No. 140,033
Int. Cl.[3] H01J 9/04
U.S. Cl. 29—25.18 5 Claims



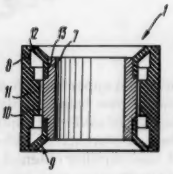
1. A method of preparing an electron gun cathode for critical spacing adjacent the control grid of said gun comprising the steps of: applying a layer of a potentially electron emissive material carried in a selectively soluble binder to an end of said cathode; preparing a spacer having a thickness substantially equal to said critical spacing, said spacer containing at least one component which is selectively soluble; contacting said layer of potentially electron emissive material with a liquid containing an amount of solvent for said selectively soluble binder and an amount of solvent for said at least one component, said liquid having a sufficient surface tension so that a drop thereof remains on said potentially electron emissive material; contacting said drop of liquid and said spacer whereby said spacer is picked up by said liquid and said solvents selectively dissolve the interfacing surfaces of said potentially electron emissive material and said spacer and fastens said spacer to said potentially electron emissive material; and drying said drop of liquid.

4,316,314

PRESSURE ROLL OF A DRAFTING DEVICE FOR A TEXTILE MACHINE

Gennady N. Shlykov, kvartal 19, 31, kv. 3; Vitaly I. Zhestkov, kvartal 19, 26, kv. 41, both of Tashkent, Chilanzar; Valentin N. Tikhonov, ulitsa Sh. Rustaveli, 55, kv. 28, Tashkent; Vasily M. Dyachkov, kvartal 7, 18 "V", kv. 8, Tashkent, Chilanzar, and Alexandr K. Kudelin, Teply Stan, 1 mikroraion, korpus 11, kv. 132, Moscow, all of U.S.S.R.

Filed Aug. 28, 1979, Ser. No. 70,500
Int. Cl.[3] B21B 31/08; D01H 5/74
U.S. Cl. 29—123 10 Claims



1. In a pressure roll of a drafting device, comprising a cylindrical casing, a sleeve of an elastic material having flanges, which is mounted in a spaced relationship to said casing, said sleeve being secured to said casing by means of said flanges to define a closed space between said casing and said sleeve, the sleeve having an internally enlarged portion in the middle portion thereof, the improvement consisting of that said flanges of said sleeve are bent toward one another and each of said flanges has at least two portions of which the first portion extends at an angle to the generatrix of the cylinder of said cylindrical casing and partially protrudes outside said casing, and the second portion extends in parallel with said generatrix between the extremity of said cylindrical casing and the middle portion thereof and is designed for fastening said elastic sleeve to the cylinder of said cylindrical casing.

4,316,315

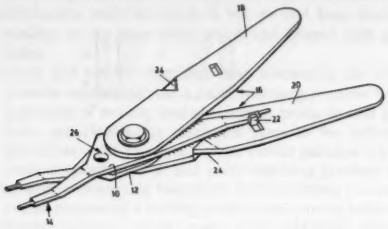
PLIERS

Josko Vogelnik, 706 Monarch Mansions, 36 Twist St., Johannesburg, Transvaal, South Africa

Filed Jan. 29, 1980, Ser. No. 116,628
Int. Cl.[3] B23P 15/10
U.S. Cl. 29—229 10 Claims

1. Double acting pliers including a pair of jaw members which are connected by a pivot member intermediate their ends with the free ends of the members defining first and second pairs of jaws on opposite sides of the pivot member, a pair of handle members which are anchored for rotation about the pivot member and formations on the handle members which when the handles are rotated towards each other in a first direction engage the jaw members adjacent the first pair of jaws to move the second pair of jaws towards each other and which when the handle members are rotated towards each other in the opposite direction engage the jaw members adjacent the second pair of jaws to move the first pair of jaws away from each other, the two pairs of jaws being at different distances from the pivot; and the formations on the handles comprising a first pair which, in the first direction of rotation of the

handles, are located to engage the inner faces of the jaw members to force the second pair of jaws together, and a second pair, spaced radially beyond the first pair of jaws, which, in the



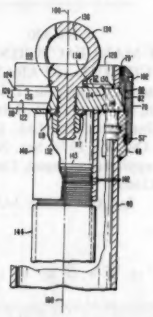
second direction of rotation of the handles, are located to engage the outer faces of the jaw members to force the first pair of jaws apart.

4,316,316

SHIPPING ASSEMBLY FOR A HYDRAULIC JACK

George A. Kappenhagen, Monroe Township, Monroe County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 28, 1980, Ser. No. 172,789
Int. Cl.³ B23P *19/00*
U.S. Cl. 29—426.1 **24 Claims**



23. A method of assembling a sectioned hydraulic jack in a jack hole, including a bottom section and a second section to be connected thereto, wherein each section includes a tubular cylinder section and a plunger section disposed within the cylinder section, with each having upper and lower ends, comprising the steps of:

providing a first top shipping cap assembly, which includes a handle, for the bottom section, with the top shipping cap assembly being releasably and independently fixed to both the upper end of the associated plunger section, and the upper end of the associated cylinder section,

providing a bottom shipping cap assembly for the second section which centers the lower end of the associated plunger section and is releasably fixed to the lower end of the associated cylinder section,

uprighting the bottom section using hoisting means linked to the handle on the first top shipping cap assembly,

aligning the uprighted bottom section over the jack hole, using the hoisting means and handle on the first top shipping cap assembly,

clamping the bottom cylinder section with clamping means,

lowering the bottom section in the jack hole, until the clamping means stops the downward travel of the bottom section and supports the weight thereof,

releasing the first top shipping cap assembly from the upper end of the bottom cylinder section,

lifting the plunger section vertically upward a predetermined distance, using the handle on the first top shipping cap assembly,

clamping the plunger section with clamping means,

supporting the plunger section with the clamping means,

uprighting the second section,

aligning the uprighted second section over the bottom section,

releasing and removing the bottom shipping cap assembly from the second section,

coupling the plunger section of the second section to the plunger section of the bottom section,

removing the clamping means from the plunger section associated with the bottom section,

lowering the second cylinder section and connected plunger sections until the lower end of the second cylinder section butts the upper end of the bottom cylinder section, and

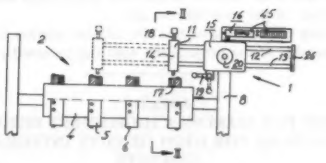
coupling the bottom and second cylinder sections.

4,316,317

METHOD AND APPARATUS FOR ADJUSTING ROLLER RINGS ON A SHAFT

Bertil Ritzling, Huddinge, Sweden, assignor to Forenade Fabriksverken, Eskilstuna, Sweden

Filed Mar. 13, 1980, Ser. No. 130,057
Claims priority, application Sweden, Mar. 22, 1979, 7902591
Int. Cl.³ B23Q *17/16*; B27G *23/00*
U.S. Cl. 29—468 **10 Claims**

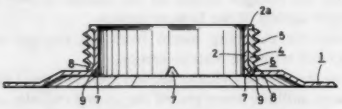


1. Method for locating and adjusting of roller rings **(5)** on a roller **(4)** in exactly predetermined positions in relation to each other and in relation to the roller **(4)** by means of a guide pin **(18)** provided displacable exactly parallelly to the axis of the roller **(4)** and corresponding guide bores **(17)** in the roller rings **(5)**, characterized in locating the guide pin **(18)** in an exactly predetermined position over the rotatable roller **(4)** and preferably locking the guide pin **(18)** in this position whereupon a first roller ring is rotated and moved axially respectively on the roller **(4)** until the guide bore **(17)** of the roller ring is in a position in alignment with the guide pin, moving the guide pin down into the guide bore **(17)** of the roller ring **(5)** for maintaining the roller ring in the actual position, thereafter securing the roller ring **(5)** on the roller **(4)**, removing the guide pin **(18)** from the guide bore **(17)** of the first roller ring, moving the guide pin **(18)** an exactly predetermined distance to a second position and locking same in said position, rotating a second roller ring **(5)** and displacing same axially on the roller **(4)** correspondingly until the guide bore **(17)** of the second roller ring is in position in alignment with the guide pin **(18)**, moving the guide pin **(18)** down into the guide bore **(17)** and securing the second guide ring **(5)** on the roller **(4)** and in a corresponding way positioning and adjusting any wanted number of roller rings **(5)** on the roller **(4)**.

4,316,318
METHOD OF MOUNTING MOUTHPIECE DEVICE OF DRUMS AND LIKE CONTAINERS

Kinji Mineo, Tokyo, Japan, assignor to Yamato Iron Works Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 969,450, Dec. 14, 1978, abandoned. This application Nov. 19, 1980, Ser. No. 208,419
Claims priority, application Japan, Dec. 15, 1977, 52/169115[U]; Dec. 15, 1977, 52/169116[U]; Aug. 29, 1978, 53/118850[U]
Int. Cl.³ B21D *39/00*; B23P *11/00*
U.S. Cl. 29—512 **1 Claim**



1. A method of mounting a mouthpiece onto a container, comprising fitting a tubular mouthpiece having an externally threaded portion, around an upright tubular portion formed integral with a top plate of the container and fixing the former to the latter as they stand, wherein the improvement comprises:

(a) preparing a tubular mouthpiece having an annular leg portion of reduced thickness at the lower portion of the externally threaded portion;

(b) fitting the thus prepared tubular mouthpiece around the upright tubular portion of the top plate and bending the upper end of the tubular portion outward to cause the bent edge of the upper end to hold the upper end of the mouthpiece from above;

(c) pressing outward from inside the lower end of the tubular portion and the said lower end leg portion of the mouthpiece both at a plurality of portions to form a plurality of projections at the lower end of the tubular portion and also the same number of recessed portions in the said leg portion of the mouthpiece; and

(d) fixing the mouthpiece to the tubular portion by the engagement of the projections with the recessed portions.

4,316,319
METHOD FOR MAKING A HIGH SHEET RESISTANCE STRUCTURE FOR HIGH DENSITY INTEGRATED CIRCUITS

Narasipur G. Anantha, Hopewell Junction, and Augustine W. Chang, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 844,768, Oct. 25, 1977, Pat. No. 4,228,450. This application Apr. 18, 1980, Ser. No. 141,717
Int. Cl.³ H01L *21/22, 21/265*
U.S. Cl. 29—577 C **7 Claims**

1. The method of fabricating an integrated circuit structure containing resistors and transistors comprising:

providing a silicon monocrystalline body which includes a substrate of a first conductivity and a region of a second conductivity thereover;

forming a pattern of dielectric regions in said silicon monocrystalline body which isolate surface regions of said body from one another;

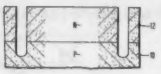
forming a highly doped buried region of said first conductivity within said region of a second conductivity within at least certain of said isolated surface regions;

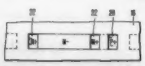
forming a highly doped reach-through region of said first conductivity to connect the surface of said silicon regions to said buried region;

forming electrical contacts to the said regions within said isolated regions of said body to fabricate said resistors in certain of said isolated regions and transistors in certain other of said isolated regions;

wherein said resistors are formed, the said contacts are made to at least the said surface region of said second conductivity and said contact made to said reach-through region for biasing purposes; and

wherein said transistors are formed, the said contacts are



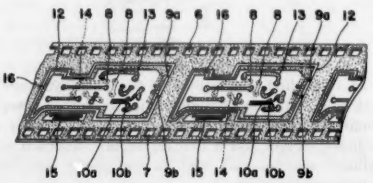


made to said surface region of second conductivity for the emitter, said contacts are made to said reach-through region of first conductivity for the base and said contacts are made to said region of second conductivity under said buried region for the collector.

4,316,320
METHOD OF MANUFACTURING ELECTRONIC CIRCUIT APPARATUS

Kenji Nogawa, Izumi; Katsuyoshi Takemura, Hirakata, and Yoshifumi Okada, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Oct. 15, 1979, Ser. No. 85,055
Claims priority, application Japan, Oct. 13, 1978, 53-126691; Oct. 13, 1978, 53-126692
Int. Cl.³ H05K *3/34*
U.S. Cl. 29—839 **5 Claims**



1. A method of manufacturing a flexible printed circuit sheet for use in electrical and electronic equipment, which comprises the steps of:

providing a flexible base sheet having a belt-like configuration and a flexible base material with a layer of electrically conductive material covering the entire surface of at least one side of said flexible base material and having rows of guide holes at predetermined intervals along the opposite longitudinal edges of said base sheet;

forming electrically conductive circuit patterns on said base sheet at predetermined intervals in the longitudinal direction and at positions between the rows of said guide holes by removing electrically conductive material from said base sheet for leaving circuit elements constituting said circuit pattrns, said circuit patterns each occupying an area on said base sheet which has a periphery and including peripheral edge circuit elements extending along at least substantially the entire periphery of each area occu-

pied by the respective circuit patterns and leaving electrically conductive material around the respective areas with the conductive material edge thereof spaced outwardly from the periphery of the respective areas, the electrically conductive material which is left on said base sheet extending to the base sheet edges and around said guide holes;

moving said flexible base sheet and positioning the circuit patterns successively at a parts attaching position by engagement of moving and positioning means in said guide holes and connecting electronic parts to the individual successive circuit patterns as the circuit patterns are successively positioned at said parts attaching position; and

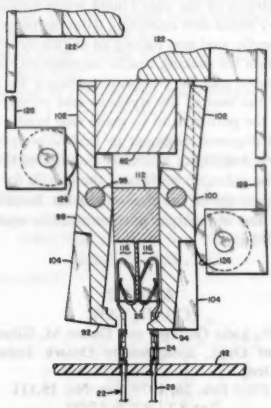
thereafter moving said base sheet for positioning successive circuit patterns in a cutting position and cutting individual flexible printed circuit sheets from said base sheet by cutting through said flexible base sheet on a line along and adjacent the edges of said peripheral edge circuit elements between said peripheral edge circuit elements and the conductive material edge left around the areas for separating the portions of said base sheet having said circuit patterns thereon from the remainder of said base sheet.

4,316,321

METHOD AND APPARATUS FOR ALIGNING AND PRESS-FITTING CONNECTOR TERMINALS INTO A SUBSTRATE

Thomas J. Wickham, Lakeville, Minn., assignor to Magnetic Peripherals Inc., Minneapolis, Minn.

Filed Jan. 28, 1980, Ser. No. 115,839
Int. Cl.³ H05K *3/30*
U.S. Cl. 29—845 **13 Claims**



1. Apparatus for press-fitting a plurality of connector terminals into individual apertures in a substrate, said connector terminals each having a contact head, a shank and an enlarged section on said shank for press-fitting in an aperture, the shanks of said terminals being fastened to a bandolier strip in predetermined spaced relation by crimp sections on said strip fastened to said shanks on each side of said enlarged sections, said apertures being aligned in a row in essentially the same predetermined space relation, said apparatus comprising:

alignment means aligning the shanks of said apertures with individual ones of said apertures; and

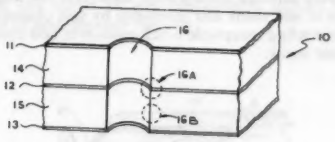
pressing means for pressing initially against the upper crimp sections so that the lower crimp sections bear against said substrate to fold said bandolier strip to open said crimp sections by reaction against said enlarged section, and for thereafter pressing against said enlarged sections on said shanks to press said enlarged sections into said apertures.

4,316,322

METHOD OF FABRICATING ELECTRICAL CONTACTS IN A PRINTED CIRCUIT BOARD

Stephanie K. Tranberg, Oceanside, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Oct. 25, 1979, Ser. No. 88,036
Int. Cl.³ H05K *3/22*
U.S. Cl. 29—852 **8 Claims**



1. A method of fabricating electrical contacts between two conductive layers of a printed circuit board that are spaced apart by an epoxy layer, said method including the steps of:

drilling holes through all of said layers at predetermined points where said electrical contacts are to be made;

subsequently washing said board in an acid to remove epoxy smear formed on the walls of the holes by said drilling step; and

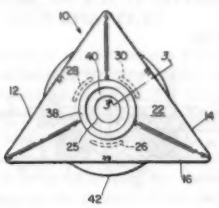
thereafter rinsing said board in a mixture consisting of only two essential ingredients to remove chemical byproducts of said epoxy smear and said acid from said walls of said holes, said two essential ingredients being a glycol ether and a base.

4,316,323

BLADE HOUSING FOR CAST CUTTING TOOL

Norbert A. Kirk, 43 E. Ohio St., Room 930, Chicago, Ill. 60611

Filed Aug. 22, 1980, Ser. No. 180,363
Int. Cl.³ B27B *9/02*
U.S. Cl. 30—124 **14 Claims**



1. A plaster cast saw device for cutting a cast comprising:

a cast cutting tool having a body and a movable circular saw blade mounted on a shaft;

a housing mounted on said body and enclosing said saw blade, said housing having peripheral flat sides such that said housing has a cross-section of polygonal shape and said housing containing a slot in the face of a plurality of said peripheral flat sides through which a portion of said saw blade projects varying distances, whereby the depth of the cut of said saw blade is determined by the side face which is positioned in contact with the cast.

4,316,324

AUXILIARY SLITTING BLADE FOR A CUTTING INSTRUMENT

Rex H. Cochran, 2003 Marietta Ave., Muscle Shoals, Ala. 35660

Filed Dec. 13, 1979, Ser. No. 103,111
Int. Cl.³ B26B *11/00*
U.S. Cl. 30—162 **3 Claims**

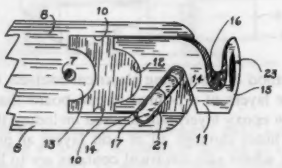
1. In a knife having a blade with an extended shank portion

covered by a handle, a retractable auxiliary slitting blade comprising, in combination:

a recessed axially disposed receptacle chamber in said handle having a lengthwise elongated bore channel extending inwardly from the butt end of said handle;

a correspondingly shaped elongated guide shank for an auxiliary blade disposed movably lengthwise in said channel and having at its outer end a formed slitting blade with a generally parabolic configuration disposed with an inwardly directed cutting edge transverse the longitudinal axis of said shank and receivable by said channel;

corresponding receptacle notch cavities in said channel and guide shank;



an incapsulated telescoping compression spring received in the seats of said cavities, respectively, movably operable directionally with the reciprocal motion of said guide shank to impinge said spring capsule on the opposing sides of said notch cavities to alternately urge said shank in the retracted and in the exposed mode with limited penetration of said blade relative to the surface to be cut by the distance of the projection of said blade beyond said handle;

and gripable activating surfaces on said blade to selectively expose and retract the same.

4,316,325

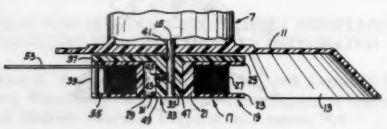
WEED CUTTING APPARATUS

William S. Brucker, 1500 Providence Rd., Towson, Md. 21204

Filed Oct. 12, 1976, Ser. No. 731,746

Int. Cl.[3] A01D *55/18*

U.S. Cl. 30—276 **1 Claim**



1. A device for storing and automatically metering monofilament line on a filament weed cutter, said device comprising:

a spool including a pair of opposing, parallel flanges, a hollow central hub extending between said flanges, and a resilient snap member on said hub, said spool receiving a freestanding coil of monofilament line on said hub between said flanges;

a support member comprising a flange, a central core extending from said flange, said core having a central bore for receiving a motor drive shaft and an outer surface configured to extend through the hollow hub of said spool for attaching said spool to said core and a lip extending radially from said outer surface for releasably engaging said snap member to releasably lock said spool on said support member, locking means for attaching said support member to the drive shaft for rotation with the drive shaft, and a plurality of retaining members extending transversely from said flange and spaced equi-angularly about said core in the direction of said central core and disposed radially outwardly of said spool for retaining the coil of monofilament line on said spool;

said support member and said spool rotating in response to the rotation of the motor shaft to cause a free end strand of the monofilament line to engage one of said retaining members and extend radially outwardly therefrom a predetermined distance to define a cutting path, said retaining members sequentially engaging each of successive strand portions to automatically meter sequential free end strands of the line.

4,316,326

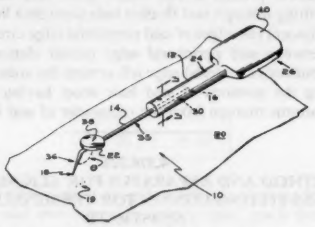
STYLUS FOR WRITING BRAILLE

Arthur B. Yeaton, and Seth A. Yeaton, both of 112 Elm St., East Longmeadow, Mass. 01028

Filed May 5, 1980, Ser. No. 146,666

Int. Cl.[3] B26F *1/00*

U.S. Cl. 30—366 **4 Claims**



1. A stylus for writing braille comprising:

(a) a handle having a horizontally enlarged outer end portion of generally plate-like configuration for locating the metacarpal portion of the user's hand when writing braille;

(b) a unitary stylus arm extending from the inner end portion of the handle, said arm having an angularly offset, pointed end portion for making braille impressions on paper; and

(c) an actuator pad for transmitting finger tip pressure exerted by the user of the stylus to said pointed end to manipulate the pointed end to make said braille impressions, said pad disposed adjacent to said offset portion of the stylus arm and being generally parallel to the upper surface of the enlarged portion of the handle for accomodating a finger tip of the user when the handle is gripped between the metacarpal portion and the small fingers of the user's hand.

4,316,327

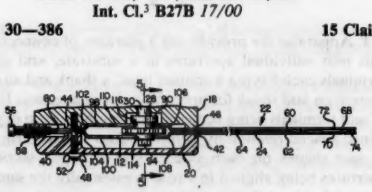
CHAIN SAW

Lewis A. Scott, Lake Oswego, and Duane M. Gibson, Milwaukie, both of Oreg., assignors to Omark Industries, Inc., Portland, Oreg.

Filed Feb. 26, 1979, Ser. No. 15,111

Int. Cl.[3] B27B *17/00*

U.S. Cl. 30—386 **15 Claims**



1. In a chain saw,

a prime mover including a shaft and frame means,

a sprocket keyed to the shaft,

a saw bar,

releasable means for clamping the saw bar to the frame means in a position in which the saw bar extends forwardly from the sprocket,

and adjustment screw means mounted on the frame means at

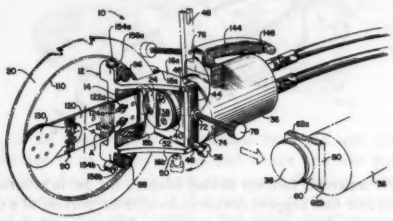
the rear of the sprocket and engaging the saw bar to hold the saw bar against rearward movement.

4,316,328

ANNULAR POWER TOOL

William R. Duggan, Sunapee, and John M. Heath, Newbury, both of N.H., assignors to Micro-Precision, Inc., Sunapee, N.H.

Filed Oct. 19, 1979, Ser. No. 86,289
Int. Cl.³ B27B *5/00*
U.S. Cl. 30—389 **29 Claims**



29. An improved annular tool of the type that is adapted to be driven for rotation about a virtual axis by a drive roller which acts upon a face of the tool, said improved annular tool comprising:

a. an outer peripheral edge including working means;

b. an inner peripheral edge;

c. two opposed, planar faces extending between said outer peripheral edge of said tool and said inner peripheral edge of said tool, the drive roller being adapted to act against one of said planar faces; and

d. a tapered guide tongue formed at said inner peripheral edge of said tool;

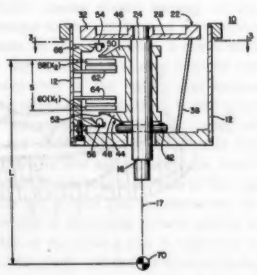
e. the free end of said tapered guide tongue being rounded.

4,316,329

INSTRUMENTED REMOTE CENTER COMPLIANCE DEVICE

Paul C. Watson, Brentwood, N.H., assignor to The Charles Stark Draper Laboratory, Cambridge, Mass.

Filed Sep. 19, 1979, Ser. No. 76,907
Int. Cl.³ G01B *5/25*
U.S. Cl. 33—169 C **11 Claims**



1. In a remote center compliance device having an operator member and a remote compliance center near the end of the operator member, the improvement comprising:

a reference structure proximate to and fixed relative to said operator member;

first and second displacement sensors mounted on said reference structure spaced from said operator member for sensing displacement thereof, said first and second sensors being disposed to one another at a first angle about the axis of said operator member;

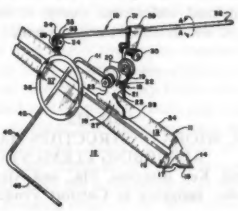
third and fourth displacement sensors mounted on said reference structure spaced from said operator member for sensing displacement thereof, said third and fourth sensors being spaced from said first and second sensors along the axis of said operator member and disposed to each other at a second angle about the axis of said operator member; said sensors being disposed to produce an output from at least one sensor for any displacement relative to radial axes of said operator member.

4,316,330

MAGNIFYING DEVICE FOR USE WITH A TRIANGULAR RULE

Jess W. Hayes, 9208 Farmington Dr., Richmond, Va. 23229

Filed Oct. 16, 1980, Ser. No. 197,469
Int. Cl.³ B43L *7/00*; G02B *27/02*
U.S. Cl. 33—488 **13 Claims**



1. A device adapted for attachment to a triangular scale rule resting on a substantially flat working surface, said rule having faces containing markings adjacent the longitudinal edges thereof and having continuous uniform longitudinal grooves centered therein, said device comprising:

(a) clamping means having two opposed elongated parallel jaws urged toward each other by resilient means and adapted to engage the grooves of the two upwardly directed faces of said rule, said jaws being moveably interengaged by bridging means adapted to be positioned above the apex of said upwardly directed faces,

(b) straight elongated extension means supported by said clamping means in a manner such that the axis of elongation of said extension means is inclined to said working surface and lies in a plane perpendicular to and bisecting said jaws,

(c) holding means attached to said extension means adjacent the uppermost extremity thereof,

(d) a magnifying glass of circular configuration pendantly supported by said holding means in a manner permitting rotative movement of said magnifying glass about an axis which is a diameter thereof and swinging movement in said perpendicular plane, and

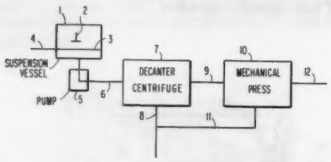
(e) stablizing means fixedly attached to said device and adapted to prevent said device from toppling during use, whereby said extension means, in coactive interaction with said holding means, permits variation of the distance of separation between said magnifying glass and said clamping means.

4,316,331

METHODS FOR MECHANICALLY DEWATERING PEAT

Olle B. Lindström, Lorensviksvagen 14, 18363 Taby, and Rikard O. Lindström, Rosenlundsgatan 28 A, 11653 Stockholm, both of Sweden

Filed Nov. 21, 1978, Ser. No. 962,710
Claims priority, application Sweden, Nov. 29, 1977, 7713395
Int. Cl.[3] F26B *7/00, 5/08*
U.S. Cl. 34—17 4 Claims



1. A process for dewatering peat, said process utilizing a decanter centrifuge and a mechanical press, said process comprising the steps of:

subjecting a slurry of water and fibrous peat to centrifugal forces in the decanter centrifuge to separate from said water/peat slurry an effluent of water and fine peat particles,

recovering said water/peat slurry absent said separated effluent, and thereafter mechanically pressing the recovered water/peat slurry in the press to express water from the recovered water/peat slurry, at least a substantial portion of which water being expressed in liquid form.

4,316,332

ATHLETIC SHOE CONSTRUCTION HAVING SHOCK ABSORBING ELEMENTS

Erik O. Giese, Key Biscayne, Fla., and Alexander L. Gross, Aspen, Colo., assignors to Comfort Products, Inc., Aspen, Colo.

Continuation of Ser. No. 32,354, Apr. 23, 1979, abandoned. This application Nov. 7, 1980, Ser. No. 204,860
Int. Cl.[3] A43B *13/18, 13/12, 21/32, 5/00*
U.S. Cl. 36—28 2 Claims

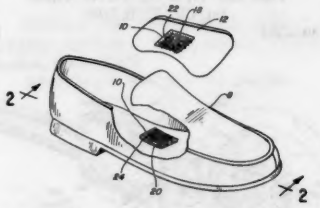
1. In an athletic shoe construction having a sole portion connected to an upper portion and where said sole portion includes a heel area, an arch area, a forefoot area and a toe area; the improvement comprising in that said sole portion includes an outer sole, a heel wedge having a cutout therein and a mid-sole overlying said forefoot area and having a cutout therein; in that the cutout in the heel wedge has a first shock absorbing element therein, in that the cutout in the mid-sole has a second shock absorbing element therein, in that the remainder of said sole portion including said toe and arch areas comprises a harder material than said first and second shock absorbing elements, and in that the outer peripheries of both said elements are surrounded by said harder material to provide stability and support to a foot when side thrust loads are imparted to the shoe.

4,316,333

SEPARABLE FASTENER FOR REMOVABLE FOOT SUPPORTS

Harvey Rothschild, Kihei, Hi., assignor to Featherspring International Corporation, Seattle, Wash.

Filed Nov. 28, 1979, Ser. No. 98,310
Int. Cl.[3] A43B *11/00, 7/22*
U.S. Cl. 36—50 8 Claims



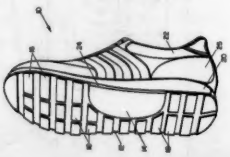
1. A separable fastener device adapted for use in securing a removable foot support device to an internal portion of a shoe comprising: first and second engaging elements, said elements being flexible planar sheets, said first element having a surface providing a means for attaching said first element to said removable foot support device, said second element having a surface bearing pressure responsive adhesive for attaching said second element to said internal portion of said shoe, said first and second elements each having another side providing releasably interengageable mating surfaces wherein said mating surfaces engage upon pressing together said surfaces and release upon pulling said surfaces apart.

4,316,334

ATHLETIC SHOE INCLUDING STIFFENING MEANS FOR SUPPORTING THE REAR PORTION OF THE FIRST METATARSAL BONE

Helen M. Hunt, Journey's End La., Princeton, N.J. 08540

Filed Mar. 27, 1980, Ser. No. 134,651
Int. Cl.[3] A43B *7/22, 13/22;* A61F *5/14*
U.S. Cl. 36—91 20 Claims



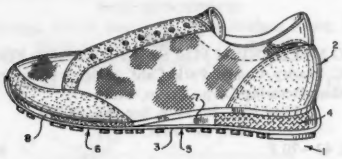
1. An athletic shoe including an upper and a sole connected to said upper, said shoe further comprising:

stiffener means for providing support to the medial portion of the base of the first metatarsal bone, said stiffening means comprising a continuous cleat attached to the bottom portion of said sole and extending from at least the base of said first metatarsal bone for at least 3 centimeters in the direction of the navicular bone.

4,316,335
ATHLETIC SHOE CONSTRUCTION

Erik O. Giese, Key Biscayne, Fla., and Alexander L. Gross, Aspen, Colo., assignors to Comfort Products, Inc., Aspen, Colo.

Continuation of Ser. No. 27,313, Apr. 5, 1979, abandoned. This application Dec. 29, 1980, Ser. No. 221,068
Int. Cl.³ A43B *13/18, 21/16, 23/28, 5/06*
U.S. Cl. 36—129 15 Claims

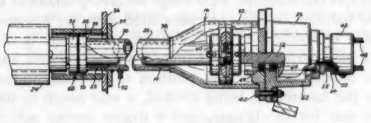


1. In an athletic shoe construction having a sole portion connected to an upper portion and where said sole portion includes a heel area, an arch area and a forefoot area; the improvement comprising in that said sole portion includes an insert in said heel area forming a first shock absorbing portion having a first degree of shock absorbing property and in said forefoot area forming a second shock absorbing portion having a second degree of shock absorbing property less than said first degree.

4,316,336
DRIVE MECHANISM FOR SAND, ETC., DREDGING APPARATUS

Willard L. Salemink, West Liberty, Iowa, assignor to Assemblers, Inc., West Liberty, Iowa

Filed May 30, 1980, Ser. No. 154,699
Int. Cl.³ E02F *3/88*
U.S. Cl. 37—67 4 Claims

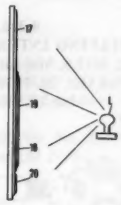


1. Dredging apparatus of the class described having an above-water carrier, an under-water excavator, a substantially water-tight tubular casing means having an upper portion relatively proximate to the carrier and an under-water lower portion proximate to the excavator, a drive shaft extending axially through the casing and having a lower end projecting beyond the lower end of the casing and connected to the excavator and an upper end proximate to the upper portion of the casing, and bearing means within the casing adjacent to its lower portion and journalling the shaft, said bearing means having axially opposite first and second ends, the first of which faces toward water at the lower portion of the casing and the second of which lies within and is contained by the casing, characterized in that a hydraulic power source is secured to the upper portion of the casing and is coaxially connected to the upper end of the shaft, said power source having a chamber adapted to contain oil for driving said source, passage means communicating with the chamber and the interior of the casing for conducting oil lengthwise of the casing to the casing-contained second end of the bearing means, and vent means connected to the lower portion of the casing in the area of the casing-contained end of the bearing means and extending to an open upper end above water for containing a head of oil substantially equal to the water pressure exerted on the first end of the bearing means.

4,316,337
ILLUMINATED DISPLAY ASSEMBLY

Daniel D. Da Costa, 186 Lymington Rd., Torquay, Devon, England

Filed Mar. 10, 1980, Ser. No. 128,925
Claims priority, application United Kingdom, Mar. 16, 1979, 09438/79
Int. Cl.³ G09F *13/04*
U.S. Cl. 40—564 8 Claims

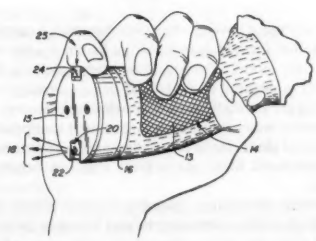


1. A display device comprising a display frame having a front viewing side and a rear side for receiving illuminating light; said display frame being opaque and having plural transparent portions provided for the transmission of light through said transparent portions of the display frame; a display member containing selected information for display detachably secured to the display frame at each of said transparent portions thereof, said display members being opaque to block-off the associated transparent portion of the frame to the transmission of light,.with the exception of the information thereon, the information on at least one of the display members being non-opaque, a backing layer of adhereably attractive material attached to said rear side of the display frame to which can be removably attached said display members, and a sheet of translucent coloured material positioned on said backing layer behind at least one of said display members, whereby when said rear face is under illumination light is transmitted solely through said information and is enhanced to an observer of said front side of the masking effect of the surrounding opacity of the display frame and the associated display member.

4,316,338
HANDHELD FIREARM ADAPTED FOR DISPENSING DEBILITATING CHEMICAL REPELLANTS

Neil E. Mason, 14 Sir Francis Drake, San Anselmo, Calif. 94960; Michael A. Dunn, 960 DeBora Ct., Fremont, Calif. 94538, and James E. Mannor, 5219 Edgewater Dr., Newark, Calif. 94560

Filed Aug. 6, 1979, Ser. No. 64,303
Int. Cl.³ F41C *27/00*
U.S. Cl. 42—1 G 7 Claims



1. In a handheld firearm comprising a barrel and a shank portion, said shank portion comprising a hand grip portion and a butt end, the improvement comprising in the shank portion,

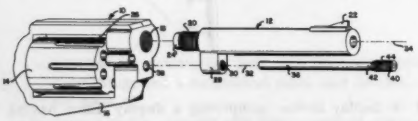
a mounted butt and comprising a reservoir for containing a dispensible fluid repellant, actuating means for dispensing said repellant from said reservoir, a last digit operatable actuator including a button located in said butt end, a nozzle being disposed in said butt whereby discharge of said repellant from said firearm is transverse to said barrel; and said actuating means comprises a connecting rod from said button and a forked wedge-shaped element to lift said nozzle whenever a force is exerted on said button.

4,316,339

HANDGUN HAVING INTERCHANGEABLE BARRELS

Ray G. Herriott, 1671 S. Magnolia Ave., Monrovia, Calif. 91016

Filed Oct. 22, 1979, Ser. No. 87,058
Int. Cl.[3] F41C *1/00*
U.S. Cl. 42—59 12 Claims



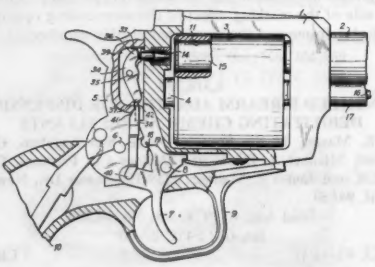
1. A revolver comprising the combination of a frame having a threaded bore therein, a barrel having a threaded end received within the threaded bore of the frame, a lug mounted on the barrel adjacent the threaded end and means fastening the lug to a selected portion of the frame to provide indexing and registration of the barrel relative to the frame.

4,316,340

SAFETY MECHANISM FOR FIREARMS

Harvey Kahn, Port Jefferson, N.Y., assignor to Alan I. Gerald Corporation, North Haven, Conn.

Filed Dec. 26, 1979, Ser. No. 107,394
Int. Cl.[3] F41C *17/04*
U.S. Cl. 42—66 11 Claims



1. In a firearm having a movable hammer, a cartridge receiving chamber located in front of the hammer when the hammer is in a strike mode, a firing pin associated with the hammer and mounted in position to strike and fire a cartridge in the chamber, a trigger pivotally mounted below said hammer to control the hammer movement, an improvement comprising

a vertical slot formed in said hammer, said slot being located behind said firing pin to form a hollow behind said firing pin,

a vertical anvil safety member located within said vertical slot pivotally connected to said hammer about a horizontal axis, the upper portion of said anvil safety member being located behind said firing pin and forming the striking surface of the hammer,

said anvil safety member connected to said slot when the trigger is in its rest position such that said anvil safety member does not exert significant firing force on said firing pin,

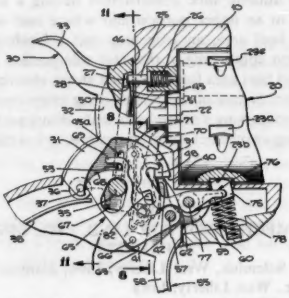
an anvil connector bar pivotally connected to said trigger and having an upper portion adapted to be positioned to impact the lower portion of said anvil safety member when said trigger moves toward its fire position, the force of impact between said anvil connector bar and the lower portion of said anvil safety member is transmitted to said upper portion of said anvil safety member by the upper portion moving forward to strike said firing pin.

4,316,341

FIRING MECHANISM FOR SINGLE ACTION FIREARM

Archie C. Landry, Canoga Park, Calif., assignor to North American Manufacturing Corp., Provo, Utah

Filed Nov. 30, 1979, Ser. No. 98,870
Int. Cl.[3] F41C *17/04*
U.S. Cl. 42—70 F 4 Claims



1. In a firearm having an external pivotally mounted hammer that is adapted to be manually cocked, a trigger pivotally mounted below the hammer, a cartridge-receiving chamber in front of the hammer, a firing pin associated with the hammer and mounted in position to strike and fire a cartridge in the chamber, a cam surface on the hammer which contacts and rotates the trigger from its rest position to its ready-to-fire position as the hammer is being cocked, a sear notch in the hammer, a sear for the trigger, and a trigger spring which pivots the trigger to engage the sear in the sear notch when the hammer is fully cocked, the safety improvement which comprises:

an elongated recess formed wihin the hammer such that when the hammer is adjacent the firing pin, an end portion of said recess is juxtaposed to the firing pin and the hammer itself does not engage the firing pin;

an elongated safety member disposed within said recess and slidably movable therein between upwardly extended and downwardly retracted positions, the extended position of said safety member being such that forward movement of the hammer will drive said safety member into contact with the rear end face of the firing pin and thereby fire the cartridge;

a safety member cam disposed beside the hammer and coupled to said safety member for controlling the extending and retracting movement thereof, said safety member cam being secured to the trigger to move therewith;

the firearm being characterized by the firing pin projecting rearwardly from the chamber housing and said safety member in its retracted position being adapted to engage the underside of the firing pin but not the rear end face thereof; and

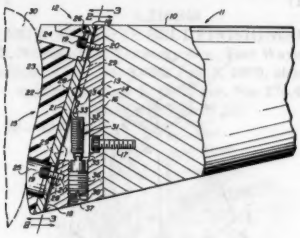
the operation of said safety member cam being such as to move said safety member from its retracted position to its extended position when the trigger is rotated from its rest position to its ready-to-fire position;

whereby when the trigger is pulled the kinetic energies of the hammer and said safety member are combined for striking the firing pin to fire the cartridge, but after the trigger has been released the subsequent application of pulling force to the trigger is not effective to insert the upper end portion of said safety member into the space behind the rear end face of the firing pin.

4,316,342
RECOIL ABSORBER AND REDIRECTOR MECHANISM FOR GUN STOCK

Jay P. Griggs, 515 N. Bridge St., Twin Bridges, Mont. 59754

Filed Apr. 28, 1980, Ser. No. 144,426
Int. Cl.³ F41C *23/00*
U.S. Cl. 42—74 13 Claims



1. A recoil absorber and redirector mechanism for a shoulder held gun stock comprising:

a first member arranged to be rigidly affixed to the rear end of a gun stock,

a second member attached to said first member and adapted for supporting the gun stock against the shoulder of a user,

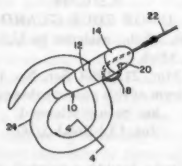
said first and second members being slidably movable laterally of each other, and

dual purpose means interconnecting said first and second members for normally biasing them to a given aligned position and under recoil of the gun on which they are affixed resiliently resisting their relative movement caused by recoil, thereby absorbing at least a part of the recoil energy.

4,316,343
PRELOOPED FISHING LURE

Michael M. Creme, 1219 Big Falls Ave., Akron, Ohio 44310

Filed Apr. 3, 1980, Ser. No. 136,940
Int. Cl.³ A01K *85/00*
U.S. Cl. 43—42.24 4 Claims



1. In an artificial fishing lure having a solid, flexible, and elongate body of elastomeric material having a head at one end thereof for receiving a fishhook in embedded relation therein, a tail of greater length extending rearwardly from said head, and wherein said lure at rest has a preformed curvilinear configuration to permit yielding flexure thereof in the water to attract fish,

the improvement therein comprising:

said predetermined curvilinear configuration defining a single loop of said body with said tail extending in a continuous arcuate path rearwardly from said head to define a transverse intersection crossing said body at a point adjacent the fishhook engagement with said head,

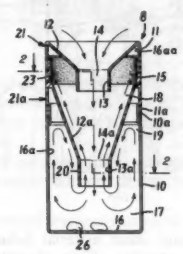
the portion of said head extending forwardly of said intersection having a dimension substantially comparable to the terminal portion of said tail extending transversely past said intersection, to define a substantially symmetrical contour,

thereby to provide substantially total balanced flexing movement of the entire length of the lure as the same is drawn through the water.

4,316,344
ROACH TRAP

Carl E. Carlsen, Rutledge Hotel/161 Lex. Ave., New York, N.Y. 10016

Filed Dec. 22, 1980, Ser. No. 218,718
Int. Cl.³ A01M *1/14*
U.S. Cl. 43—114 2 Claims



1. A roach trap comprising in combination: an enclosed vessel having separate upper and lower compartments in series and in communication with one-another and the upper compartment having an upper entry port opening from exterior space to the upper compartment, and the lower compartment having a lower entry port connecting the upper and lower compartments and being above an interior lower floor-like surface at a sufficient height to avoid a roach reaching upwardly and gaining exit by the lower entry port, a lower side wall of the lower compartment being substantially transparent and an upper side wall of the lower compartment being non-transparent whereby upper space of the lower compartmet remains darkened, and a strip of adhesive tacky coating within the enclosed vessel exterior to enclosed space of the lower compartment and substantially circumscribing a surface between space of the lower compartment and space within said upper entry port such that exit to said upper entry port is barred by said strip.

4,316,345
TOY DECORATIVE CURTAIN/DOOR

Denni F. Rivette, Chicago; Howard J. Morrison, Deerfield, and Douglas P. Montague, Chicago, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Nov. 3, 1980, Ser. No. 203,398
Int. Cl.³ A63H *33/00*
U.S. Cl. 46—1 R 6 Claims

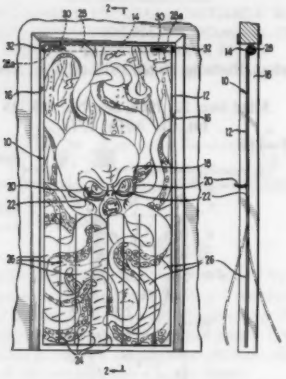
1. A toy decorative curtain/door adapted for temporary installation between vertical jamb surfaces of an entrance opening, comprising:

a sheet of thin flexible curtain material mounted on an elongated roller adapted to extend between said opposite jamb surfaces;

at least one end portion of said roller including means for biasing said roller in a longitudinal direction toward an opposite end for supporting said roller between said jamb surfaces at a selected elevation thereon;

said flexible sheet material having an upper edge secured to said roller longitudinally thereof, a pair of opposite side edges hanging downwardly of said roller adjacent said opposite jamb surfaces and a free bottom edge;

at least one face of said material having a decorative image thereon, said image including a graphic representation of a living creature with at least one graphic eye, said material also including a peephole formed in said curtain by a cut therethrough at a position adjacent said graphic eye to form a deflectable flap movable to open and close said peephole to permit viewing through said peephole; and



the portion of said sheet material below said peephole formed with a plurality of cuts therethrough, generally parallel to said side edges and extending upwardly from said free bottom edge and terminating below said peephole to form a plurality of deflectable strips permitting passage through said entrance upon deflection of said strips, said image located at least in part on said portion formed with said cuts so that said image appears to move in a lifelike manner when said strips are deflected.

4,316,346

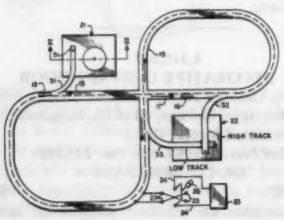
SPUR TRACK ACCESSORY OPERATION

Derek A. Brand, 965 Camino Concordia, Camarillo, Calif. 93010, and Derek R. Brand, 126 Ash Ave., Apartment 15, Carpinteria, Calif. 93013

Filed Apr. 28, 1980, Ser. No. 144,459

Int. Cl.[3] A63H *17/40, 11/10, 33/30, 19/00*

U.S. Cl. 46—212 **7 Claims**



1. In the combination of a reversible self-powered vehicle having at least one powered wheel, and an accessory powered by the vehicle, structure connecting the two comprising:

(a) a spur path upon which the vehicle rides;

(b) a permanent vehicle stop disposed along the spur for stopping movement of the vehicle;

(c) a mechanical power takeoff means located with respect to the spur and stop such that said powered wheel of the vehicle is in engagement with the power takeoff means while the vehicle is stopped;

(d) a mechanical drive connecting the power takeoff means and the accessory to energize the accessory;

(e) and manually operable remote means for reversing the direction of rotation of said powered wheel of the vehicle, to cause the vehicle to leave the stop whereby the powered wheel of the vehicle is removed from engagement with the power takeoff means and said accessory is de-energized.

4,316,347

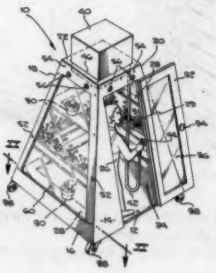
PORTABLE SOLAR GARDEN

Alvin H. Smith, 11901 Lakewood Blvd., Apt. #12, Downey, Calif. 90241

Filed Jun. 20, 1980, Ser. No. 161,287

Int. Cl.[3] A01G *9/00*

U.S. Cl. 47—17 **7 Claims**



1. A portable indoor-outdoor terrarium comprising:

a bottom portion, sunlight passing walls and a top portion defining a garden zone;

human passageway means for passage of persons into and out of said garden zone;

self contained watering means for providing water under pressure to said garden zone, said watering means includes a water container releasably mounted on said top portion, and a hose connected to said water container for transferring water to a water delivery nozzle for application to spaced locations within said garden zone;

removable hanging means extending outward from said top for hanging hangable articles; and

movement means attached to said bottom portion for reducing friction during horizontal movement of said terrarium.

4,316,348

DOOR EDGE GUARD

Robert Adell, Novi, Mich., assignor to U.S. Product Development Co., Novi, Mich.

Filed Mar. 21, 1980, Ser. No. 132,525

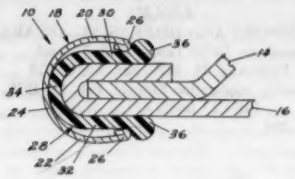
The portion of the term of this patent subsequent to Apr. 7, 1998, has been disclaimed.

Int. Cl.[3] B60J *5/00*

U.S. Cl. 49—462 **3 Claims**

1. In a vehicle body having a painted sheet metal closure, such as a door, on a marginal edge of which is disposed an ornamental and protective metallic edge guard in the form of a strip of generally U-shaped cross section having inner and outer legs disposed on opposite sides of said marginal edge, the improvement which comprises a non-metallic strip of generally U-shaped cross section having inner and outer legs disposed on opposite sides of said marginal edge and which forms an insulating liner between said marginal edge and said metallic strip and which is disposed over said marginal edge by itself before the metallic strip is applied to said marginal edge, said non-metallic strip comprising at the free edge of at least one of its legs a bead which upon application of said metallic strip to

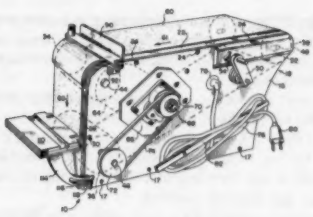
said marginal edge over said non-metallic strip, is abutted by the free edge of the corresponding leg of said metallic strip in a direction which in cross section is generally in the direction of application of said metallic strip to said marginal edge.



4,316,349
PORTABLE ABRASIVE BELT FINISHING MACHINE

Harold E. Nelson, 2126 Kentucky Ave., Fort Wayne, Ind. 46805

Continuation of Ser. No. 8,430, Feb. 1, 1979, abandoned. This application Aug. 8, 1980, Ser. No. 176,493
Int. Cl.³ B24B *21/00*
U.S. Cl. 51—135 R **12 Claims**

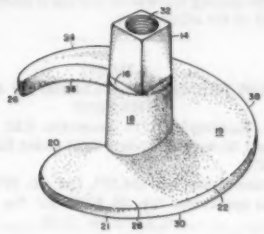


1. A compact portable abrasive belt finishing machine comprising a base, a framework fixed to said base and including a first wall panel fixed to and extending upwardly from one side of said base, a second wall panel having a generally right-angle shape, a first generally rectangular backup platen having one side edge fastened to an upper margin of said first wall panel and an opposite side edge fastened to an upper margin of said second wall panel and a second generally rectangular backup platen having one side edge fastened to a side margin of said first wall panel and an opposite edge fastened to a side margin of said second wall panel thereby to form a generally triangular-prism-shaped envelope with a right angle at one upper corner and a hypotenuse extending angularly downwardly from the other upper corner to a lower corner, a first shaft journaled to and between said side wall panels at said right angle corner and mounting a first roller thereon, a second shaft journaled to and between said wall panels at said lower corner and mounting a second roller thereon and a third shaft journaled to and between said wall panels at said other upper corner and mounting a third roller thereon, said rollers being rotatable, said third shaft being releasably fixed in place on said wall panels to facilitate insertion or removal of a continuous abrasive belt onto or off of said generally triangular-prism-shaped envelope over said second wall panel, the path of travel of the belt between said third and first rollers defining a horizontal, supported, active flight, supported by said first backup platen, and the path of travel of the belt between the first and second rollers defining a vertical, supported, active flight, supported by said second backup platen, said horizontal flight being longer than said vertical flight, and a motor mounted to and between said wall panels within said generally triangular-prism-shaped envelope and drivingly coupled to one of said first or second rollers in a manner to cause said horizontal active flight to travel from said third roller to said first roller and to cause said vertical flight to travel downwardly from said first roller to said second roller.

4,316,350
WING SCREW EARTH ANCHOR

Gary Q. Watson, 311 River Rd., Del Rio, Tex. 78840

Filed Nov. 26, 1979, Ser. No. 97,424
Int. Cl.³ E02D *5/80*
U.S. Cl. 52—157 **5 Claims**



1. A cast wing screw earth anchor comprising:

a. a central body terminating in a point;

b. an anchoring spiral encircling said central body, said spiral constructed with:

c. a point segment spiralling from said point of said central body to the maximum radius of said anchoring spiral within an arc of 90°;

d. a flared spiral central segment extending for 180° from said point segment to;

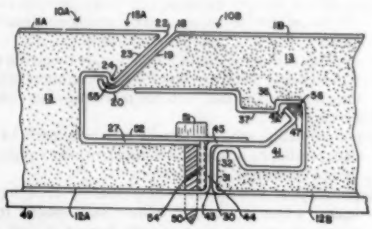
e. an elongated trailing taper extending from said flared spiral 120° to;

f. a trailing point, said anchoring spiral having a substantially squared blunt outer edge and an upper and lower surface, the distance between said upper and lower surface at said trailing point being approximately $\frac{3}{4}$" tapering to $\frac{1}{4}$" at said point, said anchoring spiral additionally projecting upward from said point at substantially a constant spiralling slope of not less than 4° nor more than 7°.

4,316,351
THERMALLY INSULATED BUILDING CONSTRUCTION PANEL AND A WALL FORMED FROM SUCH PANELS

Raymond M. L. Ting, 318 Holiday Dr., Pittsburgh, Pa. 15237

Filed May 27, 1980, Ser. No. 153,259
Int. Cl.³ E04C *1/10, 2/20*; E04B *1/41, 2/72*
U.S. Cl. 52—309.9 **7 Claims**



1. In a building panel wall assembly formed from individual building panels, each panel having an outer metal facing sheet, an inner metal facing sheet and a thermal insulation core adhesively connecting said metal sheets, wherein said outer facing sheet and said inner facing sheet have lateral profiled joint-forming surfaces for connecting a pair of said panels in side-by-side relation to a building frame; the improvement comprising:

said facing sheets having lateral corners, parallel sloping sidewalls extended one from each of said lateral corners toward the said liner sheet;

a lengthwise gutter open toward said facing sheet along a first side edge at the end of a first of said sloping sidewalls;

a lengthwise shoulder confronting the said liner sheet along a second side edge at the end of the second of said sloping sidewalls;

said panels being assembled with said gutter of one panel receiving said first shoulder of the adjoining panel and with the sloping sidewall of one panel abutting the sloping sidwall of the other panel.

4,316,352

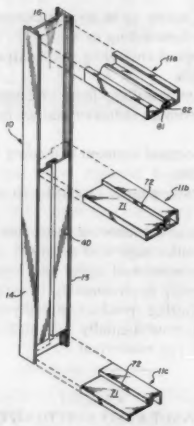
WINDOW FRAME AND METHOD OF ASSEMBLY THEREOF

William S. Harrington, 1711 Jacquelyn #32, Houston, Tex. 77055, and Richard T. Farley, 9623 Grant Rd. #4, Houston, Tex. 77070

Continuation of Ser. No. 954,857, Oct. 26, 1978, abandoned. This application Feb. 25, 1980, Ser. No. 124,355

Int. Cl.³ E04C *2/38*

U.S. Cl. 52—656 **1 Claim**



1. A window frame assembly including:

a plurality of spaced vertical members of I-beam construction, each such vertical member having a web centrally thereof and flanges perpendicular to and on opposite sides of said web;

each of said flanges includes, near both their lateral edges, (1) means for receiving axially extended spacers, said spacer receiving means comprising axially extended notches, (2) lateral ridges for abuttingly receiving the ends of horizontal members, and (3) pockets, intermediate said lateral ridges and said web, for receiving anchoring members;

a plurality of spaced horizontal members, each having its ends positioned in adjacent vertical members adjacent said vertical members' flange ridges;

a plurality of vertical extending spacers each having its lateral edges positioned within said spacer receiving means of adjacent ones of said flanges of said vertical members, each of said spacers having, centrally thereof, a vertically extending pane edge receiving housing positioned adjacent the web of a vertical member, the lower and upper edges of each of said spacers being positioned adjacent to a horizontal member, and each such edge either supporting or being supported by, one of said horizontal members; and

upper and lower anchoring members partially inserted within said pockets for fixing said vertical members to a supporting structure.

4,316,353

BAG SUPPORT AND DISPENSING APPARATUS

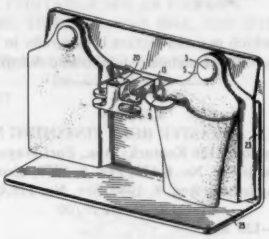
Heikki S. Suominen, 33730 Tampere 73, Finland

Filed Aug. 15, 1979, Ser. No. 66,723

Claims priority, application Finland, Feb. 16, 1979, 790513

Int. Cl.³ B65B *43/26, 67/04*

U.S. Cl. 53—384 **9 Claims**



1. Bag support apparatus for supporting at least one stack of bags, maintaining a forwardmost bag in said at least one stack in a loading position and releasing the forwardmost bag after it is loaded, comprising:

stack support means for engaging aligned apertures in the front and rear walls of the bags in said at least one stack to support the stack in an upright position, said stack support means having means for engaging a rear aperture in the rear wall of said forwardmost bag when the forwardmost bag is in said loading position;

hanger means for engaging a front aperture in the front wall of said forwardmost bag when the bag is in said loading position; and

means for pivotally supporting said hanger means for upward and forward movement to disengage said hanger means from said front aperture in said forwardmost bag.

4,316,354

APPARATUS FOR GROUPING AND INSERTING OBJECTS INTO CONTAINERS

Horst Loewenthal, Tiengen, Fed. Rep. of Germany, assignor to SIG-Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

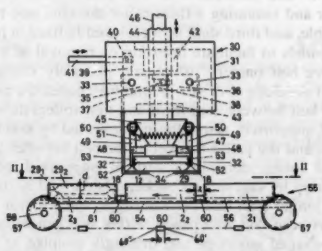
Filed Mar. 12, 1979, Ser. No. 19,604

Claims priority, application Switzerland, Mar. 15, 1978, 2831/78

The portion of the term of this patent subsequent to Mar. 3, 1998, has been disclaimed.

Int. Cl.³ B65B *35/16, 35/44*

U.S. Cl. 53—538 **6 Claims**



1. In apparatus for forming flat objects into groups and

inserting successive groups into containers, which includes a grouping station, an individual item conveyor for guiding the objects individually to the grouping station, a group conveyor for conveying the objects in groups away from the grouping station, a container conveyor for conveying successive containers relative to the group conveyor, and means for inserting groups of objects conveyed by the group conveyor into successive containers, the improvement wherein: said item conveyor and said group conveyor are arranged to convey the objects substantially horizontally and at least approximately in the same direction into said means for inserting; said means for inserting comprise vertically movable holding means movable between an upper position in which they hold a group of objects and a lowered position at which they can release such group of objects within an open container which has been brought into position by said container conveyor; said item conveyor comprises at least one endless chain, a plurality of pushers attached to said chain for pushing the objects and support means for supporting the objects as they are being conveyed; said grouping station is formed by the end region of said support means; said group conveyor comprises at least one endless chain and a plurality of pushers attached to said chain and each operative for bringing one respective group of objects to said holding means when said holding means are in their upper position; each object is finned package having two fins each extending from a respective opposite end of the package; said apparatus further comprises means for causing the fins of each package to be in an upwardly folded position in the region of said inserting means; and said holding means comprise two sets of clamping jaws operable between a gripping state in which they grip a group of packages with one set of jaws clamping in one upwardly folded fin of each package of the group and the other set of jaws clamping in the other upwardly folded fin of each package of the group, and a releasing state in which said sets of jaws release such group, with said clamping jaws being operated to move only downwardly when in their gripping state, to move only upwardly when in their releasing state, and to be movable to a selected one of several lowered positions having respectively different levels.

4,316,355

COMBINED FLYWHEEL AND CLUTCH MECHANISM FOR LAWN MOWER BLADE

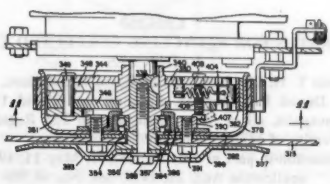
Stephen J. Hoff, Richmond, Ind., assignor to Hoffco, Inc., Richmond, Ind.

Continuation-in-part of Ser. No. 65,951, Aug. 13, 1979, Pat. No. 4,277,936. This application Jan. 24, 1980, Ser. No. 114,956

The portion of the term of this patent subsequent to Jul. 14, 1998, has been disclaimed.

Int. Cl.[3] **A01D** *69/08*

U.S. Cl. 56—11.3 **24 Claims**



1. A lawn mower, comprising an engine including a vertical power shaft with a top rotor thereon having a limited polar moment of inertia and having a depending output end for the reception of a rotary blade having a relatively large polar moment of inertia, wherein the improvement comprises

a combined flywheel and clutch driver rotor fixedly mounted on said shaft end, said rotor being of large mass and diameter so as to have a large polar moment of inertia, and clutch shoes mounted thereon having clutch face means substantially at the outer periphery of said rotor for engagement with a long torque arm against a surrounding driven clutch element,

a blade carrier rotatable on the axis of the shaft output end and including a clutch-driven element having a drum portion surrounding the flywheel-clutch rotor and having clutch face means for engagement by the clutch face means of said clutch shoes mounted on said rotor for driving a blade on the carrier, and

means for retracting said clutch shoes from said driven element so as to declutch the shaft from the blade carrier.

4,316,356

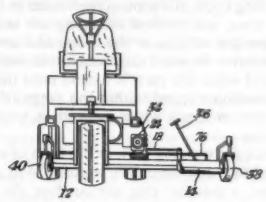
LAWN MOWER FOR CUTTING ON AN INCLINED SURFACE

Eugene J. Planeta, 5059 NE. 13th Ave., Ft. Lauderdale, Fla. 33334

Filed Jul. 28, 1980, Ser. No. 173,184

Int. Cl.[3] **A01D** *35/28*

U.S. Cl. 56—16.2 **2 Claims**



1. A rotary blade type cutting system for cutting on an inclined surface, flat surface and along the border of a ground depression, pivotally attached to a motorized ride-on tractor comprising:

a blade housing;

at least one blade, rotatably mounted to said housing;

a driving means for driving each said blade operably connected to said tractor and said housing;

said blade housing having a first end and a second end, said first end extending laterally beyond the wheel base of said tractor, the front of said housing having at least one wheel connected thereto for supporting said blade housing while on an inclined or flat surface, the front of said first end of said blade housing including an elongated, guide roller rotatably mounted thereto, such that a portion of the lower periphery of said guide roller extends below the edge of said blade housing regulating the height of the cut of said blade when cutting along the border of a ground depression;

at least a first and second flexible support member connecting the approximate mid section of said blade housing to said tractor;

at least a third flexible support member connecting said second end to said tractor;

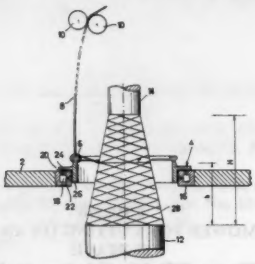
said first, second and third flexible support members positioned to allow manual pivoting of said blade housing about a longitudinal axis relative to the tractor;

a manual control arm to allow manual privoting of said blade housing by the operator of said tractor, one end of said arm connected to said first end.

4,316,357
METHOD AND DEVICE FOR WINDING YARN ONTO BOBBINS IN THE FORM OF CONES IN SPINNING FRAMES

Jacques Le Chatelier, Riedisheim, France, assignor to Societe Alsacienne de Constructions Mechaniques, Mulhouse, France

Filed May 5, 1980, Ser. No. 146,640
Claims priority, application France, May 17, 1979, 79 12564
Int. Cl.³ D01H *1/36, 7/56*
U.S. Cl. 57—95 **9 Claims**



1. A method for winding yarn in the form of a cone onto a bobbin carried by a spindle in a spinning or twisting frame, wherein said method consists in passing the yarn to be wound through a traveler mounted on a revolving ring, in lifting and lowering the ring cyclically around the bobbin in order to form the winding cone, said method including the step of varying the spindle speed in relation to the lifting and lowering of the ring with a relative forward displacement in time, between a minimum speed when the yarn is wound onto the apex of the cone and a maximum speed within the range of 1.02 to 1.10 times the minimum speed when the yarn is wound onto the base of the cone.

4. In a device for winding yarn in the form of a cone onto a bobbin carried by a spindle driven in rotation in a spinning or twisting frame, a traveler ring surrounding the spindle and mounted on a ring support plate, means for imparting a vertical reciprocating movement to the support plate, said traveler ring being a revolving ring, driving means including a speed-changing unit for driving the spindle in rotation, the improvement which comprises means coupling the speed-changing unit with the ring support plate, in which the speed-changing unit is responsive to the height of the traveler for driving the spindle at a speed which varies between 1 to 1.02 and 1 to 1.10 with the maximum speed when the traveler is located at a height in the vicinity of the base of the cone and at minimum speed when the traveler is located at a height in the vicinity of the apex of the cone, and wherein the means for coupling the ring support plate with the speed-changing unit control means provides a relative time displacement or phase shift between the end positions of said ring support plate and the end positions of said speed-changing unit control means.

4,316,358
FALSE-TWISTING SYSTEM

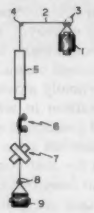
Isao Taksi, Komatsu, Japan, assignor to Oda Gosen Kogyo Kabushiki Kaisha, Komatsu, Japan

Filed Sep. 25, 1979, Ser. No. 78,736
Claims priority, application Japan, Oct. 5, 1978, 53-122046
Int. Cl.³ D02G *1/02*
U.S. Cl. 57—286 **1 Claim**

1. A false-twisting system, comprising means for feeding, filament yarns, a heating unit, a false-twisting apparatus disposed below the heating unit having two endless belts which intercross each other and are urged into contact with each other and liquid applier means disposed between the heater means and the false-twisting apparatus for applying a liquid to the filament yarns;

the liquid applier means including a pipe which has a wall thereof partly cut away, the liquid flowing through the pipe and the yarns passing through the cut away wall;

the pipe being substantially U-shaped and having a base portion thereof oreinted vertically, part of the wall of the



base portion being cut away, the system further comprising means for guiding the filament yarns vertically downwardly through only the cut away wall of the base portion of the pipe and thereby through the liquid flowing therethrough.

4,316,359
METHOD OF IMPARTING HYPERGOLICITY TO NON-HYPERGOLIC ROCKET PROPELLANTS

David C. Sayles, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 7, 1979, Ser. No. 72,733
Int. Cl.³ C06D *5/08*
U.S. Cl. 60—212 **8 Claims**

1. A method of imparting an acceptable hypergolicity to non-hypergolic rocket fuels comprising:

(i) providing a non-hypergolic rocket fuel selected from the group consisting of turpentine, aniline, triethylamine, furfuryl alcohol and predetermined blend ratios of the same;

(ii) providing a liquid oxidizer of red fuming nitric acid containing about 21% N_2O_4;

(iii) adding ammonium metavanadate in concentrations of about 1% on a weight-to-weight basis to said liquid oxidizer to yield a modified oxidizer; and,

(iv) introducing simultaneously into a combustion chamber predetermined amounts of said rocket fuel and said modified oxidizer to provide an oxidizer to fuel ratio by volume from about 1.0 to 1.0 to about 3.3 to 1.0, said predetermined amounts of said rocket fuel and said modified oxidizer, when combined, producing an acceptable hypergolicity with an ignition delay time of less than 50 milliseconds.

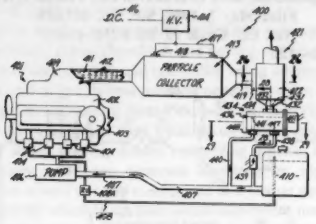
4,316,360
APPARATUS FOR RECYCLING COLLECTED EXHAUST PARTICLES

Benjamin Y. H. Liu, North Oaks; David B. Kittelson, Minneapolis; Daniel F. Dolan, St. Anthony, and David Y. H. Pui, Minneapolis, all of Minn., assignors to The Regents of the University of Minn., Minneapolis, Minn.

Continuation-in-part of Ser. No. 38,077, May 11, 1979. This application Aug. 22, 1979, Ser. No. 68,703
Int. Cl.³ F01N *3/00*
U.S. Cl. 60—275 **26 Claims**

1. An apparatus for reducing the amount of particles discharged into the atmosphere comprising: first means having at least one combustion chamber for receiving hydrocarbon fuel and air and accommodating combustion of the fuel and air, said combustion imparting electrical charges on at least some of, the particles formed during the combustion of the fuel and air, during said imparting of electrical charges on the particles a substantially equal number of particles are positively charged and negatively charged whereby the particles as a whole are a

substantially electrically neutral mass of particles, particle collecting means for collecting at least some of the charged particles, second means for directing the charged particles from the combustion chamber directly to the particle collecting means without subjecting the charged particles to a charging step with an intermediate particle charging means whereby the electrical charges on the particles remain substantially the



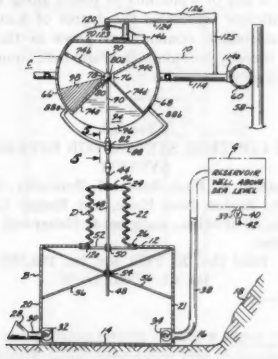
same, means associated with the particle collecting means to establish an electric field whereby at least some of the charged particles moving into the electric field are collected on the collecting means, particle separating means coupled to the particle collecting means operable to collect the collected particles that separate from the particle collecting means, and means for receiving particles from the particle separating means and dispensing the particles into the fuel.

4,316,361

WATER SUPPORTED WIND ACTUATED POWER GENERATING ASSEMBLY

Russell A. Hoar, 6151 Vernon St., Long Beach, Calif. 90815

Filed Jan. 8, 1981, Ser. No. 223,348
Int. Cl.³ F03D *9/00*
U.S. Cl. 60—398 **4 Claims**



1. In combination with a body of water having a bottom and a shore line, an elevated water reservoir on said shore line to receive water, a water discharge line extending downwardly from said reservoir through which water flows by gravity, water actuated power generating means connected to said discharge line to receive water therefrom and generate power as a result thereof, a wind actuated assembly for supplying water to said reservoir;

a. a plurality of piles driven into said bottom adjacent said shore that define a pen that is filled with water to the same elevation as that of said body of water;

b. a buoyant ring in said pen that may rotate and move vertically relative to said piles;

c. a rigid generally rectangular frame disposed within said ring;

d. first transversely disposed means that pivotally connect said frame to said ring;

e. an elongate buoyant body disposed within said frame, said buoyant body having a longitudinal center line;

f. second means that pivotally connect said buoyant body to said rectangular frame to permit said buoyant body to rock relative to said longitudinal axis;

g. at least one vertically disposed vane operatively associated with said buoyant body, said vane when subjected to wind concurrently rotating said buoyant ring, rectangular frame and said buoyant body relative to said piles that said vane is disposed substantially parallel to the direction of said wind;

h. at least one mast pivotally supported from said buoyant body and extending upwardly therefrom, said mast located outwardly a first distance from said center line;

i. a sail rigidly secured to said mast;

j. a counterweight on said buoyant body located outwardly from said center line a distance sufficient to compensate for the weight of said mast and sail;

k. an enclosure assembly disposed below the surface of said body of water that includes a first check valve that opens and allows water to enter said enclosure assembly only when a negative pressure is formed therein, a second check that opens and allows water to discharge from said enclosure assembly only when a positive pressure is formed therein, a vertically deformable bellows that extends upwardly from said enclosure assembly, said bellows creating a negative pressure in said enclosure assembly as it lengthens longitudinally and a positive pressure when it is shortened longitudinally;

l. third means for alternatively shortening and lengthening said bellows as said buoyant body pivots on said longitudinal axis;

m. a water supply conduit connected to said second check valve for delivering water to said reservoir; and

n. power operated, tilt sensing means that rotate saiid mast from a first position where said sail is in a first position substantially normal to the direction of said wind when said buoyant body has pivoted to a first position where the weight of said counterweight as it moves upwardly relative to said center line counteracts the weight of said mast and sail and the force of said wind on the latter to a second position where said sail is substantially parallel to the direction of said wind, with said buoyant body, mast and sail due to the weight of said counterweight pivoting about said center line to a second position as said counter weight moves downwardly relative to said center line, with said power operated, tilt sensing means at said second position pivoting said mast and sail to said first position to again complete the cycle in which said buoyant body alternally pivots in opposite directions about said center line.

4,316,362

METHOD AND APPARATUS FOR OPERATING A CROSS-COMPOUND TURBINE GENERATOR PLANT

Satoshi Ninomiya; Yasuhiro Yamachi; Katsukuni Hisano, all of Hitachi; Ryosuke Arie, Katsuta; Katsuto Kashiwahara, and Hidesumi Kuwashima, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 26, 1979, Ser. No. 97,498
Claims priority, application Japan, Nov. 29, 1978, 53-146544
Int. Cl.³ F01K *13/02*
U.S. Cl. 60—646 **16 Claims**

1. Cross-compound turbine apparatus comprising:

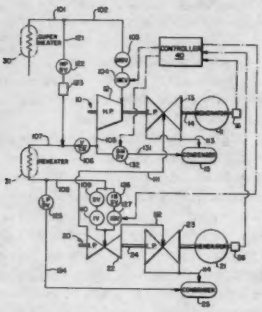
a first turbine-generator section having a high pressure turbine and a first low pressure turbine drivingly connected to a first generator driving shaft,

a second turbine-generator section having an intermediate pressure turbine drivingly connected to a second generator driving shaft,

steam supplying means for supplying driving steam to said high pressure turbine,

primary steam line means communicating exhaust steam from said high pressure turbine to drive said intermediate pressure turbine during steady state operation of said first and second turbine-generator sections,

bypass steam line means for communicating steam from said steam supplying means to said intermediate pressure turbine in bypassing relationship to said high pressure turbine,



control means for controlling the flow of steam in said primary and bypass steam line means during starting operation of said turbine-generator sections, said control means including means to maintain the relative speeds of the first and second generator driving shafts in a predetermined synchronous ratio, and

controllable vent means for venting a portion of the steam flow in the primary steam line means during starting operations.

4,316,363

TEMPERATURE CONTROL SYSTEM

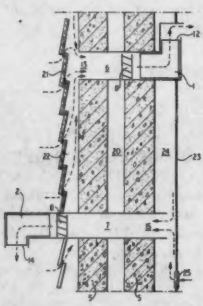
Ian D. McKirdy, 6 Kirkriggs Ave., Rutherglen, Glasgow, Scotland

Filed May 12, 1980, Ser. No. 149,035

Claims priority, application United Kingdom, May 12, 1979, 16574/79

Int. Cl.³ F25D *17/06*

U.S. Cl. 62—89 **8 Claims**



1. A method of ventilating and controlling the temperature of a space bounded by walling, the walling having an inner face and an outer face, comprising providing refrigeration apparatus having an evaporator section and a condenser section, guiding air from outside the space into heat exchange relationship with said outer face of the walling and thence past one of said sections and into the space, and simultaneously guiding air from inside the space into heat exchange relationship with said inner face of the walling and thence past the other of said sections and out of the space.

4,316,364

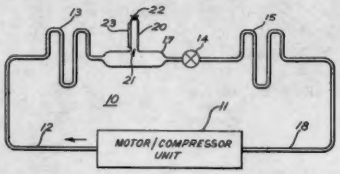
VAPOR COMPRESSION REFRIGERANT SYSTEM MONITOR

Hans O. Spauschus, 4300 Greenhaven La., Prospect, Ky. 40059

Filed May 7, 1980, Ser. No. 147,691

Int. Cl.³ G01K *13/00*; **F25B** *43/04*

U.S. Cl. 62—129 **1 Claim**



1. Condition monitoring apparatus for a vapor compression refrigerant system having a refrigerant flow circuit including a compressor, a condenser, fluid expansion means, and an evaporator, said monitoring apparatus comprising:

gas accumulating means including an elongated chamber positioned in the high pressure side of the refrigerant circuit at a high point to which non-condensable contaminant gases in the refrigerant stream migrate during operation of the system;

and means including an elongated temperature sensitive indicator in thermal communication with said gas accumulating means along a substantial portion of the length of said chamber whereby a depressed temperature indication relative to temperature of the condensed refrigerant stream at any of a plurality of points along the length of said indicator represents the degree of accumulation of non-condensable contaminant gases in the refrigerant stream thereby providing an in-situ indication of the onset of a system malfunction.

4,316,365

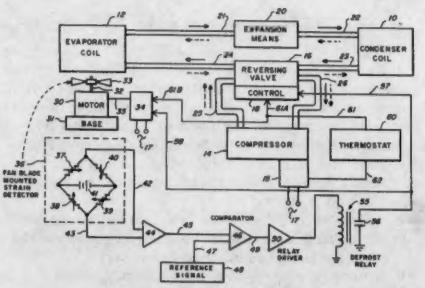
DEFROST CONTROL SYSTEM FOR REFRIGERATION SYSTEM

Dale A. Mueller, St. Paul; Robert T. Ruminsky, Bloomington; Stephen L. Serber, New Hope, and Rodger C. Wolfgram, Burnsville, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 20, 1980, Ser. No. 198,508

Int. Cl.³ F25D *21/06*

U.S. Cl. 62—151 **1 Claim**



1. An evaporator coil defrost control system (hereinafter "defrost control system") for a refrigeration system (hereinaf-

ter "system") wherein said refrigeration system comprises refrigerant compression means, a condenser coil, an evaporator coil, an electric motor operated fan positioned adjacent to said evaporator coil and adapted when energized, to blow air through said evaporator coil, and refrigerant conduit means connecting said coils, said defrost control system comprising:

strain sensing means connected to said fan and adapted to measure force to said fan and to produce a signal indicative of said measured force;

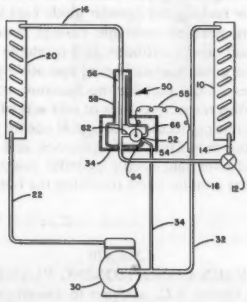
controller means connected to said strain sensing means to receive the signal therefrom and having operative connections to said system, said controller being adapted to place said system in a defrost mode of operation upon said signal of said strain sensing means having a characteristic indicative of a significant frost build-up on said evaporator coil, said strain sensing means comprisng a least four strain sensitive resistance elements mounted on separate fan blades of said fan and configured in a bridge network, the output of which is applied to said controller means, a first pair of said strain sensitive resistive elements being changed in a first sense upon an increase in reactive force and a second pair of said strain sensitive resistive elements being changed in an opposite sense upon an increase in reactive force.

4,316,366

METHOD AND APPARATUS FOR INTEGRATING COMPONENTS OF A REFRIGERATION SYSTEM

John D. Manning, Liverpool, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Apr. 21, 1980, Ser. No. 142,517
Int. Cl.³ F25B 5/00
U.S. Cl. 62—200 **19 Claims**



1. An air conditioning system having a vapor compression refrigeration circuit, including a first heat exchanger, a second heat exchanger and a compressor which comprises:

means for conducting refrigerant from the first heat exchanger to the second heat exchanger including an intermediate heat exchanger portion

means for diverting a portion of the flow of refrigerant flowing from the first exchanger to the second heat exchanger to the intermediate heat exchanger portion wherein the diverted refrigerant is flashed absorbing heat energy from the refrigerant flowing through the means for conducting; and

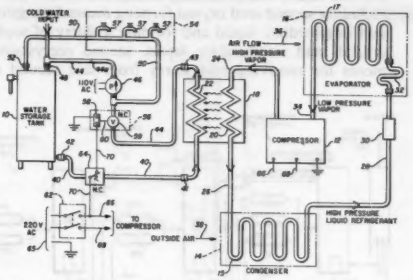
suction line means for routing refrigerant from the second heat exchanger and the intermediate heat exchanger to the compressor, said suction line drawing refrigerant from the second heat exchanger and the intermediate heat exchanger at the same suction pressure.

4,316,367

HEAT RECOVERY AND HOT WATER CIRCULATION SYSTEM

Ronald J. Yaeger, 5006 Millcreek, Dallas, Tex. 75234, and Gerald W. Keller, 6853 Carolinecrest, Dallas, Tex. 75214

Filed Oct. 6, 1978, Ser. No. 949,083
Int. Cl.³ F25B 27/02, 13/00
U.S. Cl. 62—238.6 **2 Claims**



1. In a heat recovery system for recovering waste heat from refrigeration means to heat water supplied to a hot water reservoir, said system including heat exchange means having a refrigerant passage and a water passage mutually coupled in heat exchange relation, said refrigeration means including a compressor having an outlet coupled to said refrigerant passage, the improvement comprising:

(a) first conduit means in fluid communication with said water passage and coupled between an inlet to said hot water reservoir and an outlet from said hot water reservoir, thereby to define a first flow path for water to flow from said reservoir, through said heat exchange means, and thereafter into said reservoir;

(b) second conduit means coupled between another outlet from said hot water reservoir and a portion of said first conduit, thereby to define a second flow path for water to flow from said reservoir, through a portion of said first flow path, and thereafter into said reservoir through said inlet;

(c) a plurality of faucets coupled to said second conduit means;

(d) continuously running pump means disposed within the common portion of said first and second flow paths; and

(e) valve means disposed within said first conduit means actuated to a first position for closing off the flow from said water passage when the water temperature in said water passage is above a predetermined level and actuated to a second position for enabling the flow from said water passage when the water temperature in said water passage is below a predetermined level.

4,316,368

MULTI-STAGE COUNTER-CURRENT CONCENTRATING METHOD

Willem Van Pelt, and Jacques P. Roodenrijs, both of 's-Hertogenbosch, Netherlands, assignors to Grasso's Koniklijke Machinefabrieken, N.V., 's-Hertogenbosch, Netherlands

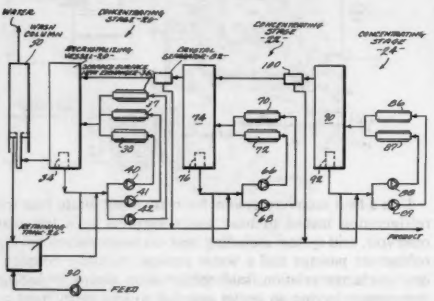
Filed Oct. 30, 1980, Ser. No. 202,429
Int. Cl.³ B01D 9/04
U.S. Cl. 62—542 **32 Claims**

1. A multiple-stage, counter-current system for concentrating an aqueous feed liquid to produce a concentrated product comprising:

a first concentrating stage for receiving said feed liquid and producing an intermediate concentrated liquid including first seed crystal forming means for receiving feed liquid and forming a slurry of seed ice crystals and feed liquid, first recrystallizing means for receiving said slurry from said first seed crystal forming means and producing a first

slurry containing larger crystals, first means for separating a portion of the liquid from crystals from said first recrystallizing means and supplying at least part of said portion to said first seed crystal forming means, and first means for removing said slurry from said first recrystallizing means and separating the larger crystals removed from said recrystallizing means;

at least a second concentrating stage for receiving said intermediate liquid and producing said concentrated product including second seed crystal forming means for receiving said intermediate liquid and forming a slurry of seed ice crystals and intermediate liquid, second recrystallizing means for receiving said slurry from said second seed



crystal forming means and producing a second slurry containing larger crystals, second means for separating a portion of the liquid from crystals from said second recrystallizing means and supplying at least part of said portion to said second seed crystal forming means, and means for removing said second slurry from said second recrystallizing means; and

means for supplying at least said larger crystals removed from said second recrystallizing means to said first recrystallizing means so that at least substantially all of the seed crystals in said first recrystallizing means melt and reform on said larger crystals from said second recrystallizing means.

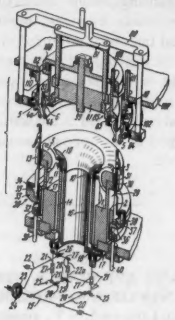
4,316,369

CIRCULAR WARP KNITTING MACHINE

Igor V. Ragoza, prospekt Chernyakhovskogo, 26, kopus 3, kv. 56, Vitebsk; Alexandr S. Dalidovich, Leningradskoe shosse, 122, kv. 206, Moscow; Petr M. Begunov, Moskovsky prospekt, 7, kv. 114; Petr J. Vasiljuk, ulitsa Shirokaya, 30, kv. 5, both of Vitebsk; Robert T. Tonikian, ulitsa Chkalova, 11, korpus 12, kv. 79; Dina N. Tonikian, ulitsa Chkalova, 11, korpus 10, kv. 92, both of Vitebsk, and Alexandr V. Makarenko, ulitsa Chkalova, 11, korpus 10, kv. 92, Vitebsk, all of U.S.S.R.

Filed Nov. 9, 1979, Ser. No. 92,414
Int. Cl.³ D04B *25/02*
U.S. Cl. 66—81 **5 Claims**

1. A circular warp knitting machine comprising: a bed; a needle cylinder fixedly mounted on said bed; knitting needles which are caused to reciprocate vertically arranged around said needle cylinder; a mechanism for vertically moving said knitting needles; a holder movable along said needle cylinder connected to said mechanism for vertically moving the knitting needles; said holder being arranged outside said needle cylinder and carrying said knitting needles mounted therein; a main shaft of the machine; radially movable sinkers having butts; an annular cam, the butts of said sinkers being received in said annular cam; a sinker cup installed inside said needle cylinder and having grooves accommodating said sinkers; a sleeve movable along said needle cylinder, said sleeve being arranged inside the needle cylinder and carrying in the upper portion thereof said annular cam receiving the butts of the sinkers, a tube installed on said bed inside the needle cylinder, the tube forming with the needle cylinder a cylindrical guide in which said sleeve is installed and said tube having a sinker funnel secured in an upper portion thereof, the lower portion of the sleeve being connected to said main shaft of the machine to impart radial motion to the sinkers, said connection of the sleeve to the main shaft of the machine including a frame mounted on said main shaft for rotation relative thereto, links articulated to said sleeve and to said frame, and a double-arm lever having one arm articulated by means of a rod to said frame, the other arm of the lever permanently engaging a member mounted on said shaft for imparting motion to said sinkers and wherein articulation joints connect the frame to said links and said rod to said double-arm lever, said articulation joints being adjustable with said links and said rod being of



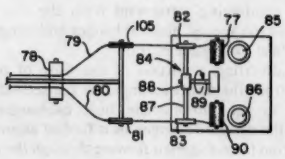
adjustable length; two sets of guide needles having butts; annular cams receiving the butts of the guide needles of said both sets; two concentrically arranged annular guide bars having grooves receiving the guide needles of both sets; racking mechanisms for racking the annular guide bars along the front of said knitting needles; rotatable casings concentrically arranged over said needle cylinder, said rotatable casings carrying said annular guide bars and being operatively connected to respective ones of the racking mechanisms; rocking mechanisms for rocking respective ones of said sets of guide needles between said knitting needles; said guide needle rocking mechanisms including respective sliding frames, said sliding frames being arranged over said needle cylinder coaxially therewith and carrying the annular cams receiving the butts of the guide needles.

4,316,370

YARN CONDITIONING PLANT

Erwin Steiner, Clover, S.C., assignor to American Sussen Corp., Charlotte, N.C.

Filed Apr. 29, 1980, Ser. No. 145,010
Int. Cl.³ B65H *59/38*
U.S. Cl. 68—5 D **9 Claims**



1. Yarn conditioning plant comprising:

(a) yarn supply means for holding a supply of yarn;

(b) yarn conditioning chamber means for processing yarn at high temperature;

(c) at least one yarn transport means for conveying yarn

received from said yarn supply means through said yarn conditioning chamber means;

(d) first transfer means associated with each of said transport means for removing a plurality of yarn threads from said yarn supply means and transferring the yarn threads to said associated yarn transport means;

(e) second transfer means for removing said plurality of yarn threads from said yarn transport means;

(f) spooler means for receiving said plurality of yarn threads from said second transfer means and for separately spooling each yarn thread; and

(g) yarn tension balancing means for compensating for differences in tension between the tension of a first of said yarn threads and a second of said yarn threads, said yarn tension balancing means being positioned between said second transfer means and said spooler means, whereby a plurality of spools of uniform firmness are obtained.

4,316,371

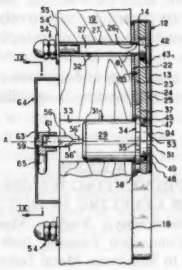
HIGH SAFETY BOLT CONTROL DEVICES

Claude Del Nero, Le Chesnay, France, assignor to Fichet-Bauche, France

Filed Jan. 18, 1980, Ser. No. 113,182

Int. Cl.³ E05B *63/00*

U.S. Cl. 70—417 **27 Claims**



1. In a high safety bolt mounted on a door-leaf having an inner face and an outer face, for the locking and unlocking of said door-leaf and comprising:

a latch bolt movably housed in translation in a casing fixed on the inner face of the door-leaf and having a locking and an unlocking position;

a safety cylinder housed in a hole extending through the door-leaf and comprising a cylindrical body in which is housed, rotatable by a key, a barrel with an outer face having a key opening accessible from the outer face of the door-leaf;

a transmission member for the movement of the barrel to the latch bolt for displacing the latter to its locking or unlocking position when the barrel is rotated, the improvement comprising:

a first plate on the side of the outer face of the door-leaf, fixed to the latter by fixation means, immobilizing said cylindrical body in rotation and comprising an outer face,

a second plate fixed to the outer face of the first plate for preventing the access to the immobilization means of the cylindrical body, said second plate extending over the outer face of the barrel, and formed with a hole placed in register with the key opening, and

means for covering the fixation means.

4,316,372

PROTECTIVE DEVICE FOR A DRAWING PRESS

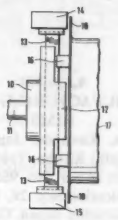
Martin Veil, Göppingen-Faurndau, Fed. Rep. of Germany, assignor to L. Schuler GmbH, Göppingen-Faurndau, Fed. Rep. of Germany

Filed Apr. 23, 1979, Ser. No. 32,258

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1978, 2817787

Int. Cl.³ B21B *33/00*

U.S. Cl. 72—4 **2 Claims**



1. A protective arrangement for a drawing press comprising:

detector means for detecting a faultily drawn workpiece; and

shut down means operatively connected with the detector means and the drawing press;

wherein the detector means are disposed downstream of a drawing station of the drawing press and outside of the path of travel of a correctly drawn workpiece; and

wherein the detector means includes a pair of contactless switches adjustably mounted on a carrier plate means, said switches being disposed perpendicularly to the conveying direction in diametrical opposition to each other,

and wherein, during conveyance of a defective workpiece, at least one of the adjustable contactless switches is tripped,

whereby, in the event a faultily drawn workpiece is detected by the detector means, a shutdown of the drawing press is effected.

4,316,373

METHOD AND APPARATUS FOR THE EXTRUSION OF TUBES OF EASILY OXIDIZED MATERIALS

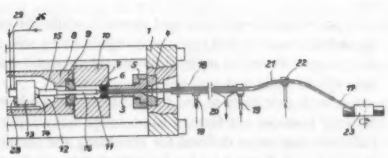
Franz-Josef Zilges, Max Reger Strasse 64, 4050 Monchengladbach, and Heinrich Kutz, Nordkanal Allee 16, 4040 Neuss, both of Fed. Rep. of Germany

Division of Ser. No. 937,773, Aug. 29, 1978, Pat. No. 4,192,162. This application Feb. 12, 1980, Ser. No. 120,755

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1977, 2739800

Int. Cl.³ B21B *45/02*

U.S. Cl. 72—45 **5 Claims**



1. An extrusion press for extruding tubes of readily oxidizable material from pierced billets, comprising a counter platen, a cylinder cross-head, tie rods connecting the counter platen and cylinder cross-head, a reciprocating cross-head, a billet container, an extrusion die holder, an extrusion die supported by said die holder, means to move said moving cross-head, billet and billet container relative to said die holder, a mandrel

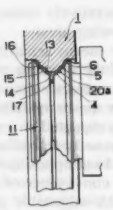
insertable into said pierced billet, said die, die holder, billet container, moving cross-head and mandrel being cooperatively associated so that when said billet container is moved toward said die holder it moves said billet and billet container towards said die to extrude said billet into a tube, and means cooperatively associated with said mandrel for passing a protective gas into the interior of the extruded tube.

4,316,374

METHOD OF MANUFACTURING SEAMLESS WHEEL RIMS

Nobuyoshi Nagatsuma, Kawagoe, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 955,992, Oct. 30, 1978, abandoned. This application Sep. 26, 1980, Ser. No. 191,249
Claims priority, application Japan, Oct. 31, 1977, 52/130523; Oct. 31, 1977, 52/130524; Oct. 31, 1977, 52/130525
Int. Cl.³ B21H *1/10*
U.S. Cl. 72—91 **4 Claims**



1. A method for manufacturing seamless wheel rims, including the steps of:

interposing a ring-shaped initial material between a rotatable die having an inner surface corresponding to an outside diameter dimension and an outer peripheral shape of a rim to be formed and a freely rotatable pressing roll provided within said die and having an outer surface corresponding to an inner peripheral shape of said rim;

said ring-shaped material having a diameter larger than the outside diameter of said roll and smaller than the inside diameter of said die;

driving said die to rotate;

moving said roll toward said die;

roll-shaping said material interposed between said die and said pressing roll by the pressing action of said roll while said material is rotated by said die and enlarged in diameter;

further roll-shaping said enlarged material while the enlarging deformation of said material is regulated by said die so as to cause substantial metal flow of said enlarged material between said die and said roll;

forming both side ends of the shaped material while excess material portions are formed to protrude sidewardly from reduced clearances defined for throttling the metal flow between said die and said roll on both sides in the width direction; and

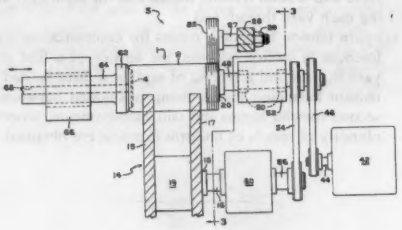
forming a projection on the inner periphery of said enlarged material, the thickness of said projection in the radial direction being substantially thicker than that of said initial material, while the metal flow in the width direction of said enlarged material is restrained by said reduced clearances.

4,316,375

APPARATUS FOR CORRUGATING CAN BODY FLANGES

Harry W. Lee, Jr., Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Division of Ser. No. 99,099, Nov. 30, 1979, Pat. No. 4,266,685. This application Oct. 14, 1980, Ser. No. 196,670
Int. Cl.³ B21D *15/06*
U.S. Cl. 72—105 **1 Claim**



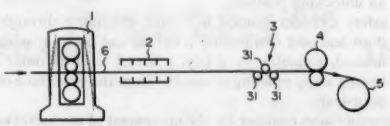
1. Apparatus for producing a plurality of corrugations in the flange region of metallic can bodies comprising a starwheel for carrying said can bodies to and from a work station, means for indexing said starwheel, an inner rotatable grooved die at said work station, motor means connected to said inner rotatable grooved die to rotate said inner rotatable grooved die, a free wheeling pivotable outer rotatable grooved die, piston means for positioning said flange region of said can bodies between said inner rotatable grooved die and said outer rotatable grooved die and cam means for selectively operatively associating said outer rotatable grooved die with said flange region of said can bodies and said inner rotatable grooved die to thereby rotate said can bodies and said outer rotatable grooved die and produce said corrugating in said flange region of said can bodies.

4,316,376

METHOD FOR PREVENTING WANDERING OF STRIP UNDER ROLLER LEVELING IN HOT ROLLING LINE

Takeshi Masui, Nishinomiya; Yoshiro Masui, Ashiya; Teruo Hiramatu, and Tomisabro Yamada, both of Ibaraki, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed May 15, 1980, Ser. No. 149,953
Int. Cl.³ B21B *1/26, 41/00*
U.S. Cl. 72—161 **10 Claims**



1. In a method for the formation of strip in a hot rolling line, wherein the strip is passed through mill stands of the hot rolling line and is then coiled on a coiler, the improvement comprising:

providing between the last downstream said mill stand and said coiler at least one hot roller leveler unit comprising a plurality of leveler rolls, and passing said strip through said leveler rolls, thereby correcting shape defects in said strip; and

preventing lateral wandering of said strip during passage thereof through said hot roller leveler unit by adjusting the angular orientation of at least one of said leveler rolls in a

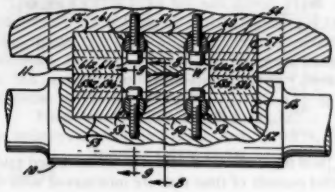
horizontal plane or in a vertical plane with respect to said strip.

4,316,377

ROLL FORGING MACHINE

Vernon R. Fencl, Northbrook, and Laszlo Javorik, Oregon, both of Ill., assignors to Grotnes Metalforming Systems, Inc., Chicago, Ill.

Filed Nov. 23, 1979, Ser. No. 96,818
Int. Cl.[3] B21B 1/42
U.S. Cl. 72—189 11 Claims



1. In a roll forging machine comprising

a pair of opposed work rolls carrying cooperating dies for forging a workpiece positioned between the two rolls,

drive means for rotating said work rolls,

a supporting frame for said work rolls,

a pair of support rails fixedly mounted on each work roll on opposite sides of the die thereon and aligned with each other and with said die in the longitudinal direction along the surface of the work roll, said support rails on the two work rolls being aligned with each other so that the two pairs of rails ride on each other when the work rolls are urged toward each other and turned to forge a workpiece therebetween,

means for urging said work rolls toward each other with a force substantially greater than the force required to forge the workpiece so that the work rolls are prestressed by the pressure of said support rails on each other, said support rails being substantially wider than said dies in the direction of the axes of said work rolls so that said work rolls with said support rails thereon have a spring constant substantially greater than the spring constant of said supporting frame for the work rolls.

4,316,378

EXTRUSION PRESS WITH METHOD AND APPARATUS FOR REMOVING UNUSED METAL FROM EXTRUDER PISTON

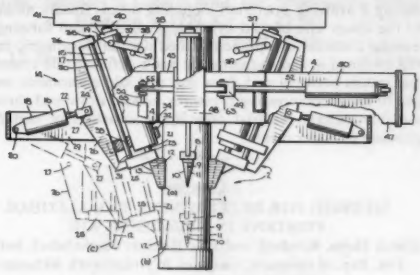
Aldo Bellasio, Milan, and Giulio Brusa, Monza, both of Italy, assignors to Industrie Pirelli Societa per Azioni, Milan, Italy

Filed Jun. 24, 1980, Ser. No. 162,391
Claims priority, application Italy, Jun. 29, 1979, 23965 A/79
Int. Cl.[3] B21C 23/26, 23/30, 35/04
U.S. Cl. 72—268 19 Claims

1. In metal extruding apparatus comprising a piston for applying pressure to the metal to be extruded and in which a collar of the metal is formed around the lower end portion of the piston during the operation of the apparatus to extrude the metal, said collar having a portion of its interior wall which is farther from the piston end than the remainder thereof spaced from said piston, a method of removing the collar from the end of the piston which comprises:

cutting at least a portion of said collar along a line interiorly of said collar and in a direction extending from the end of the collar most remote from the piston end, said cutting being performed in the space between the collar and the piston; and

applying divaricating forces to the interior of said collar commencing at said end of said collar and then, proceeding toward the other end of the collar and then, directing such forces radially outwardly of the piston to enlarge the smallest inner size of the collar to a size greater than the



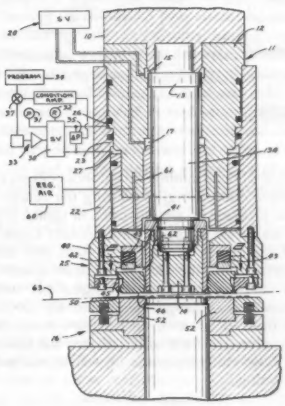
outer size of the piston whereby the collar is removed from the piston.

4,316,379

DEEP DRAWING PRESS WITH BLANKING AND DRAW PAD PRESSURE CONTROL

Dennis H. Andersen, Minnetonka, Minn., assignor to MTS Systems Corporation, Eden Prairie, Minn.

Division of Ser. No. 941,387, Sep. 12, 1978, Pat. No. 4,248,545.
This application Aug. 21, 1980, Ser. No. 179,971
Int. Cl.[3] B21D 22/00
U.S. Cl. 72—351 7 Claims



1. In a deep draw punch assembly having a punch member for deep drawing cans, a tooling set for holding the blank and including a drawing die for operation in conjunction with said punch, said tooling set including blank cutting means, and a cutting ring and draw pad cooperating with said tooling set, the improvement comprising fluid pressure cylinder means for operating said cutting ring and for regulating the pressure of said draw pad acting against said blank during a drawing operation including a tubular cylindrical member surrounding said punch, and including means forming a pair of fluid pressure cylinders relative to a piston portion of said cylindrical member to provide a double acting fluid pressure actuator, said cutting ring being fixedly mounted to said cylindrical member at the lower edge thereof, said cutting ring being moved during actuation of said cylinder means from a position wherein it cooperates with said blank cutting means to cut a blank from a piece of material supported on said tooling set to a position raised from said tooling set, said draw pad comprising an

annular pad member supported relative to said cutting ring for movement by said cutting ring during retraction of said cutting ring away from said tooling set, and means to exert a pressure from said tubular cylinder member on said draw pad member during a drawing operation including means fixedly mounted to the lower end of said cylindrical member and forming an annular chamber of a predetermined size, an elastomeric material confined in and engaging the walls defining said chamber, and means between said draw pad and said elastomeric material to exert compressive pressures on said draw pad through said elastomeric material only upon actuation of said fluid pressure cylinder means.

4,316,380
METHOD FOR DETERMINING THE ALCOHOL CONTENT IN BREATHING AIR

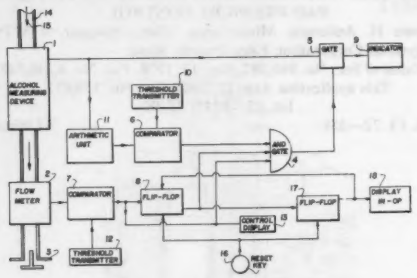
Ulrich Heim, Reinfeld, and Eric Hecker, Stockelsdorf, both of Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 15, 1980, Ser. No. 121,899

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1979, 2906864

Int. Cl.³ G01N *21/00*

U.S. Cl. 73—23 **9 Claims**



1. A method of determining the alcohol content of the breath of a test person comprising, measuring the alcohol content of the breath to produce an alcohol content signal, measuring the change per unit time of the alcohol content signal, measuring the flow of the breath of the test person, and indicating the alcohol content using the alcohol content system only when the change in the alcohol content signal per unit time falls below a preselected change value, and the flow is above a preselected flow value, and, once having reached the preselected flow value, the flow of breath has not fallen below the preselected flow value since the flow first reached the preselected flow value.

4,316,381
MODULATED DETECTOR

Terry A. Woodruff, Newark, Del., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 14, 1980, Ser. No. 167,856

Int. Cl.³ G01N *27/18, 27/16*

U.S. Cl. 73—27 R **10 Claims**

1. Apparatus including a detector for deriving from a continuous flow of sample fluid an output signal corresponding to the value of a given characteristic of the fluid applied to the detector in such manner as to substantially eliminate the effect of low frequency drift in the output signal of the detector and increase the signal-to-noise ratio, comprising

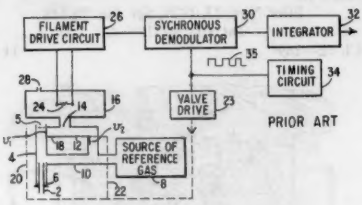
a detector having a fluid input and an electrical output and for producing at said output a signal corresponding to the value of a given characteristic of fluid applied to its fluid input,

means defining a storage volume,

means for connecting a source of a flow of sample fluid, when present, to said storage volume during first periods of time,

means for conducting reference fluid from a source, when present, to the fluid input of said detector at an increased rate during said first periods of time,

means for conducting fluid stored in said storage volume to



the fluid input of said detector at an increased rate during second periods of time that are interleaved with the first, and

synchronous demodulating means coupled to the electrical output of said detector for deriving an output signal corresponding to the peak-to-peak amplitude of an electrical signal appearing at the output of said detector.

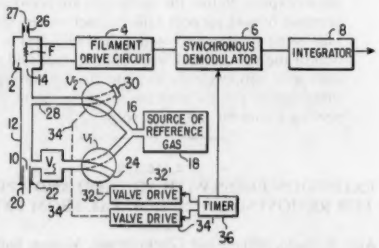
4,316,382
DETECTOR WITH INTERMITTENT FLOW

Terry A. Woodruff, Newark, Del., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 21, 1980, Ser. No. 170,365

Int. Cl.³ G01N *27/18*

U.S. Cl. 73—27 R **6 Claims**



1. A concentration detector system including means for modulating the respective flows of sample and reference fluids through the detector, comprising

a detector having a chamber and means for producing an electrical signal corresponding to the value of a given characteristic of material contained in said chamber,

first fluid control means causing sample fluid, when present, to flow into a fluid entrance of said chamber during spaced first periods of time and to remain in said chamber during second periods of time respectively occurring after said first periods,

second fluid control means causing reference fluid, when present, to flow into said chamber during third periods of time that follow said second periods of time and to remain in said chamber during fourth periods of time that follow said third periods, the first, second, third and fourth periods occurring in repeated sequence, and

a synchronous detector coupled to receive the electrical signals produced by said detector for deriving a signal corresponding to the difference between the amplitude of

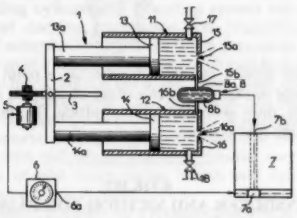
the electrical signals produced during said third and fourth periods of time.

4,316,383

APPARATUS FOR MEASURING THE REPRESENTATIVE PARAMETERS OF RHEOLOGICAL PROPERTIES OF VISCOELASTIC FLUIDS

Daniel Fruman, Le Pecq, France, and Marshall Tulin, Chevy Chase, Md., assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), France

Filed Jan. 14, 1980, Ser. No. 111,727
Claims priority, application France, Jan. 12, 1979, 79 00788
Int. Cl.³ G01N *11/08*
U.S. Cl. 73—55 **22 Claims**



1. Apparatus adapted to determine representative parameters of rheologic.' properties of viscoelastic liquids, particularly dilute solutions of macromolecular compositions, said apparatus including means for translating the difference between the behavior of said liquids during flow and beyond a critical strain rate with the behavior of a Newtonian liquid having a viscosity equal to that of the viscoelastic liquid ascertaining by the relationship between strain rate and the resulting stress in the two liquids, said appartus comprising:

(a) a pair of similar cylinders each terminating at one end in a calibrated thin wall orifice;

(b) a pair of pistons adapted to slide within the cylinders and adapted to be pushed conjointly towards the ends of the cylinders by a motor;

(c) blockable filling means connecting each of said cylinders to a respective reservoir of liquid, one of said reservoirs adapted to hold a viscoelastic liquid and the other of said reservoirs adapted to hold a Newtonian comparison liquid;

(d) first differential pressure measurement means including two conduits, each of said conduits opening into a respective one of said cylinders immediately upstream of one of said calibrated end orifices;

(e) control means coupled to said motor to adjust its speed upwardly along a predetermined increasing range of speeds selected such that the strain rate of the liquid flow in each of the calibrated orifices has a minimal speed which is lower than and a maximum speed which is several times greater than the critical strain rate of the viscoelastic liquid; and

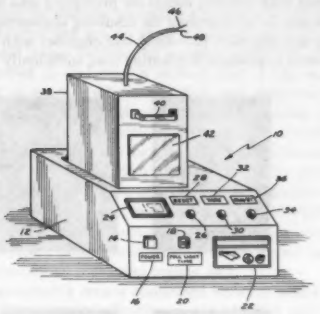
(f) registration means for correlating respective data couples gathered from the control means and from the first differential pressure measurement means, the entire registered dats representing the relationship between the differential stress and the strain rate.

4,316,384

DIGITAL MOISTURE METER AND METHOD FOR DETERMINING PERCENT WEIGHT LOSS

Dennis L. Pommer, and Paul E. Coleman, both of Minneapolis, Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed Sep. 4, 1979, Ser. No. 72,398
Int. Cl.³ G01N *5/02*; G06G *7/16*
U.S. Cl. 73—76 **4 Claims**



1. A digital moisture meter comprising a balance including a platen for receiving a sample thereon and means for providing a digital signal having a value in accordance with the initial weight of the sample on said platen and also successive later digital signals having digital values representative of later reduced weights of said sample, means for heating said sample to remove moisture therefrom, means for reducing the intensity of said heating means after a predetermined time interval, first means for storing said digital signal having a value representative of the initial weight of said sample, second means for storing said later digital signals having a value representative of a subsequent reduced weight, each of said later digital signals being successively stored in said second storing means, calculating means responsive to the value of said digital signal stored in said first storing means and the value of said digital signal stored in said second storing means at a given time for providing a digital signal having a value representative of the percent weight loss for each successively stored later digital signal, third means for storing one of said digital signals having a value representative of percent weight loss, fourth means for storing a later digital signal having a value representative of a later percent weight loss, means for comparing the value of said one digital signal stored in said third storing means with the value of the digital signal stored in said fourth storing means and for substituting the digital signal stored in said fourth storing means for the one stored in said third storing means if greater in value than the one already stored in said third storing means, means for displaying the value of said digital signal stored in said third storing means if the value stored in the fourth storing means is less than or equal to the signal stored in said third storing means, and means for disconnecting said heating means only after a predetermined number of successive digital signals stored in said fourth means have a value less than or equal to the digital signal stored in said third storing means and have thus denoted a stabilized weight loss condition.

4,316,385

FINGERPRINTING CRYSTALS

Robert C. DeVries, Saratoga, and Roy E. Tuft, Albany, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 18, 1980, Ser. No. 160,464
Int. Cl.³ G01N *19/08*
U.S. Cl. 73—104 **12 Claims**

1. A process for fingerprinting a crystal selected from the

group consisting of natural diamond, synthetic diamond and cubic boron nitride by implanting ions therein which impart to said crystal a predetermined structure which comprises providing said crystal with at least one external surface having a surface area of at least 0.1 square millimeter which is at least substantially smooth and without significant elevational differences, positioning said crystal in a chamber for ion-bombardment of at least said smooth surface thereof, providing said chamber with ionizing means for producing ions in beam form and means for accelerating the resulting implanting ions, evacuating said chamber, providing said chamber with a material to be ionized to produce implanting ions, sufficiently ionizing said

material forming and accelerating a beam of the resulting implanting ions to selectively penetrate at least said smooth surface of said crystal to impart a predetermined structure thereto without significant deleterious damage to the appearance of said crystal, said chamber having been evacuated sufficiently to be free of at least significant contaminants, electrostatically charging the resulting characterized crystal so that at least said smooth surface of said crystal is electrostatically charged, applying a powder to said charged surface forming a powder pattern on said charged surface, said powder ranging in particle size from submicron to about 45 microns, said pattern being a delineation of the ion-implanted structure in said crystal.

4,316,386

FLUID PRESSURE MEASURING APPARATUS FOR INCORPORATION INTO A PIPELINE RISING FROM A WELL

Ferenc Kerekes, Ahlten, Fed. Rep. of Germany, assignor to Preussag Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 18, 1980, Ser. No. 131,447

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1979, 2913896

Int. Cl.[3] **E21B** *47/06*

U.S. Cl. 73—151 **10 Claims**

1. Means for measuring fluid pressure surrounding a delivery pipe disposed in a well comprising

a first pipe section connected at its lower end to said delivery pipe,

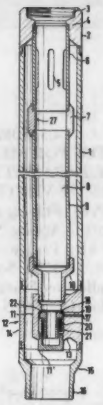
a second pipe section disposed concentrically within said first pipe section and defining a chamber having an open upper end,

a passage through the wall of said second pipe section permitting fluid flow from the annular space around said chamber to said delivery pipe through said open upper end,

a radially-disposed conduit connecting said chamber with the space outside said delivery pipe,

valve means within said chamber for closing off said conduit,

and a pressure sensing device adapted to slide into said chamber through said open end, the lower end of said device serving to open said valve, the upper end of said



device sealing off said chamber at a point below said passage so that the interior of the chamber is in communication only with the space outside the delivery pipe through said conduit.

4,316,387

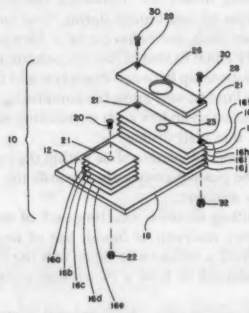
TRANSDUCER AND METHOD FOR PASSIVELY MEASURING THERMAL RADIATION FLUENCE

Peter S. Hughes, P.O. Box 278, Los Alamos, N. Mex. 87544

Filed Sep. 24, 1979, Ser. No. 78,236

Int. Cl.[3] **G01K** *17/00;* **G01J** *5/00*

U.S. Cl. 73—190 H **9 Claims**



1. A transducer for passively measuring the thermal radiation fluence from a radiative heat source, said transducer comprising:

a selected number of stretched plastic pieces each having selected thicknesses and geometric shapes, said pieces having selected stress trapped therein and being selectively stacked one on top of the other for providing at least partial thermal shielding by the pieces above to the pieces below for sensing the thermal radiation fluence when exposed to the radiative heat source as recorded by the measurable geometric changes in said plastic pieces caused thereby; and

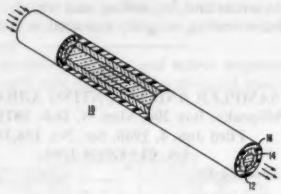
fastening means for holding said pieces in position one with respect to the other.

4,316,388

TEMPERATURE DETECTION USING THE REFRACTIVE INDICES OF LIGHT GUIDES

Robert C. Miller, Penn Hills, and Frederick M. Ryan, Loyalhanna Township, Westmoreland County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 14,014, Feb. 22, 1979, abandoned. This application Aug. 14, 1980, Ser. No. 178,049
Int. Cl.[3] G01K *11/12*
U.S. Cl. 73—356 10 Claims



1. A temperature detection apparatus comprising:

at least one light guide, said light guide including a core and a cladding cylindrically extending around the core; said core and cladding constructed from respective first and second materials having temperature dependent refractive indices over a temperature range with said first core material having a higher refractive index than said second cladding material over a first portion of said range during which said light guide is transmissive of light and said first core material having a refractive index that is equal to or lower than said second cladding material over a second portion of said range during which said light guide is non-transmissive of light;

a light source for supplying a predetermined light into a first end of said light guide; and

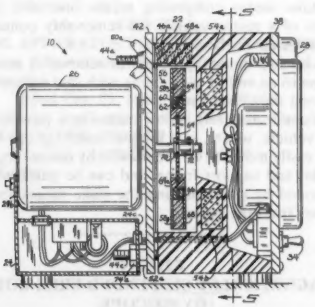
means for detecting the presence or absence of light transmitted to a second end of said light guide as an indication the temperature to which said light guide is subjected is respectively in the first or second portion of said temperature range.

4,316,389

RATE OF TURN INDICATOR

E. Paul Shannon, Rte. 2, Box 249, Killen, Ala. 35645

Filed Dec. 13, 1979, Ser. No. 103,355
Int. Cl.[3] G01C *19/06, 19/42*
U.S. Cl. 73—504 14 Claims



1. Rate of turn indicator for indicating rate of turn of a vessel from a predetermined course, said rate of turn indicator comprising:

a. alternating current motor means, a housing including a base securing said motor means, said motor means including an axial shaft extending axially forwardly of said motor, and power supply circuit components supported on said base;

b. electromagnetic sensing means positioned about and diametrically opposed about said shaft, an upward member secured to said base supporting said sensing means, said sensing means spaced on an axially symmetrical plane of said member;

c. magnetic gyro wheel means including at least one ring of ferromagnetic material including a plurality of alternating poles secured and spaced about a circumferential periphery of said ring, a flexible and nonstretchable hub of material secured to said ring, a second ring of like material secured to another side of said hub, and means securing said hub to said shaft and spaced from said sensing means;

d. adjustment means for adjusting the distance of said sensing coil means from said magnetic gyro wheel means, said adjustment means including a plurality of bolts extending rearwardly on a plurality of corners of said member, said bolts connecting to said housing, spring holes including springs positioned between said member and said housing, and a forward panel mounted on a front of said member and including an indicating means; and,

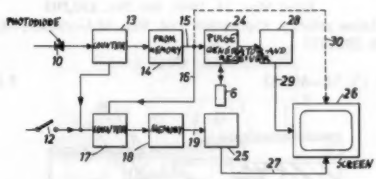
e. signal processing means connected between said sensing coil means and said indicating means whereby said motor means rotates said magnetic gyro wheel means thereby inducing current in said signal processing means subsequently displayed on said indicating means, thereby providing a rate of turn indication.

4,316,390

METHOD AND EQUIPMENT FOR PLOTTING SECTION IMAGES OF OBJECTS SUBJECTED TO ULTRASONIC EXAMINATION

Carl Kretz, Zipf, Austria, assignor to Kretztechnik Gesellschaft m.b.H., Zipf, Austria

Filed Oct. 26, 1979, Ser. No. 88,368
Claims priority, application Austria, Jan. 11, 1979, 200/79
Int. Cl.[3] G01N *29/00*
U.S. Cl. 73—620 23 Claims



1. A method of ultrasonic examination in which a beam of sound pulses is cyclically moved to scan an object in a preselected section surface at a scanning velocity which varies during each cycle in accordance with a scanning velocity function, comprising

generating echoes in said section surface in response to said sound pulses are represented on a plotting surface at locations which are geometrically coordinated with the locations at which corresponding echoes have originated in said section surface,

varying the pulse repetition period of said sound pulses during a cycle of motion in accordance with a pulse repetition period function which has a predetermined proportional relationship to said scanning velocity function,

said varying step including generating primary pulses at a fixed predetermined frequency, and

selecting only part of said primary pulses during each of said cycles in accordance with a preselected program whereby the frequency of said selected pulses varies in proportion

to said scanning velocity function, and using said selected pulses to trigger respective ones of said sound pulses.

4,316,391

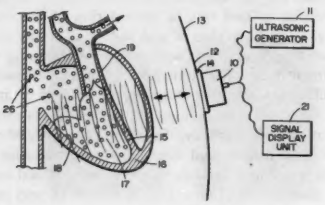
FLOW RATE MEASUREMENT

Ernest G. Tickner, Gilroy, Calif., assignor to Ultra Med, Inc., Sunnyvale, Calif.

Filed Nov. 13, 1979, Ser. No. 93,525

Int. Cl.³ G01F *1/00*

U.S. Cl. 73—861.25 **9 Claims**



1. A method of measuring fluid flow rate in a system having a conduit through which fluid flows, comprising:

adding a substance which provides a plurality of bubbles of known size to said system upstream of said conduit;

impelling a sonic pulse across said conduit, from a position opposite and spaced from said conduit, as said bubbles pass therethrough;

measuring the degree of attenuation of a sonic signal defined by said pulse which passes across said conduit, said attenuation being due to the presence of said bubbles; and

determining the fluid flow rate from the degree of attenuation of said sonic signal.

4,316,392

FLOWMETER HAVING A ROTARY BODY AND MEANS FOR CALIBRATION

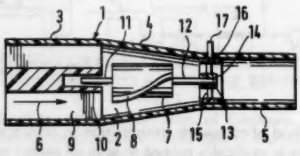
Dieter Leber, Eschborn, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 14, 1980, Ser. No. 130,503

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1979, 2911827

Int. Cl.³ G01F *1/12*

U.S. Cl. 73—861.83 **5 Claims**



2. A flowmeter comprising

a housing defining a flow channel adapted for flow therethrough,

a rotary body being formed with at least one helical spiral on its outer periphery and being rotatably supported in said flow channel,

said housing and said flow channel being formed in a vicinity of said rotary body with inner cross-sections tapering in the direction of flow,

means for displacing and setting said rotary body in the direction of flow,

a first bearing arranged upstream of said rotary body and a second bearing arranged downstream of said rotary body constitute means for rotatably supporting said rotary body in said flow channel,

said rotary body includes,

a first journal supported freely displaceable in an axial direction in said first bearing, and

a second journal fixed in the axial direction in said second bearing, said second bearing is developed as a thrust bearing,

said second bearing is adjustable with self-locking action in the direction of flow and constitutes said displacing and setting means,

said housing has a helical guide means,

a tripod has outer guide means for engaging said helical guide means and for shifting said tripod,

said thrust bearing is rigidly arranged in said tripod.

4,316,393

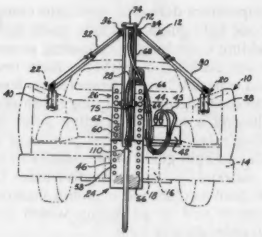
SOIL SAMPLER AND MOUNTING ARRANGEMENT

Harry Philipenko, Box 294, Max, N. Dak. 58759

Filed Jun. 4, 1980, Ser. No. 156,331

Int. Cl.³ G01N *1/08*

U.S. Cl. 73—864.45 **8 Claims**



1. A soil sampler assembly comprising

a support frame,

motor means for driving a soil sample taker,

means securing said motor means to said support frame,

a mounting frame,

means securing said support frame to said mounting frame,

first and second generally horizontal brace arms,

means connecting common ends of said arms to said mounting frame, adjacent on upper portion thereof, for pivotal adjustment of the arms relative to the mounting frame,

stake means at ends of said arms remote from the mounting frame,

means connecting each stake means to an arm for pivotal adjustment of the stake means relative to the arm,

said stake means comprising means insertable into stake holes of a motor vehicle for removably connecting the stake means to the body,

means on said mounting frame for removably securing said frame to an end of the vehicle with said soil sample taker beyond the vehicle end, and

means connecting said motor means to a power source on the vehicle, where, said sampler assembly can be quickly and easily mounted on the vehicle by connecting the stake means and support frame, and can be quickly and easily removed by disconnecting the stake means and support means from the vehicle.

4,316,394

MAGNETICALLY SUSPENDED FREE ROTOR GYROSCOPE

James R. Dohogne, Phoenix, Ariz., assignor to Sperry Corporation, New York, N.Y.

Filed Feb. 11, 1980, Ser. No. 120,203

Int. Cl.³ G01C *19/24*

U.S. Cl. 74—5.46 **9 Claims**

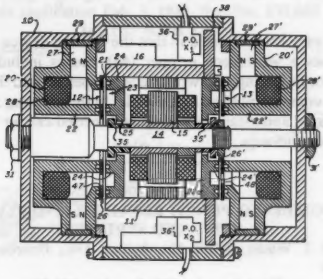
1. A free rotor gyroscopic rate sensor comprising: housing means having a housing axis,

generally cylindrically rotor means adapted to spin about a spin axis in said housing normally coincident with said housing axis,

magnetic suspension means coupled between said housing means and said rotor means for contactlessly suspending said rotor means in said housing means with said rotor axis normally coincident with said housing axis, said magnetic suspension means comprising,

at least one pair of axially spaced magnetic flux gaps formed by at least one pair of magnetically permeable pole pieces on said housing means radially spaced from said spin axis and a cooperating pair of correspondingly axially and radially spaced pole pieces on said rotor means, and

means for producing passive and active magnetic fluxes between said pole pieces, said active and passive magnetic fluxes supporting said rotor means in unstable equilibrium in a first direction relative to said spin axis and said passive magnetic flux supporting said rotor means in stable equilibrium in a second direction relative to said spin axis at right angles to said first direction,



motive means coupled between said housing and rotor means for spinning said rotor means about said spin axis,

the mean axial distance between said axially spaced gaps bearing a predetermined ratio to the mean radius of said spaced gaps, such that in response to relative tilting of said rotor spin axis and said housing means, the passive magnetic flux force tending to retain said rotor means in stable equilibrium in said second direction is substantially balanced by the passive magnetic flux force tending to destabilize said unstable equilibrium in said first direction.

4,316,395

CONTROL APPARATUS FOR DRIVE TRANSMISSIONS

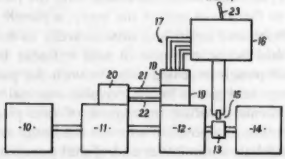
Derek Brown, 7 Southlands, Eighton Bank, Gateshead, Tyne & Wear, England

Filed Oct. 25, 1979, Ser. No. 87,931

Claims priority, application United Kingdom, Oct. 26, 1978, 42001/78; Jun. 5, 1979, 19542/79

Int. Cl.³ B60K *41/06, 41/04*

U.S. Cl. 74—866 **8 Claims**



1. Control apparatus for the drive transmission of a vehicle, comprising: an input terminal for an electrical signal having a frequency representative of a rate of rotation, a manually operable direction switch, first switching means adapted to be so controlled in response to the said signal as to remain in one state thereof during each cycle of the said signal when the duration of the cycle is less than a predetermined duration, and to be settable in another state thereof by actuation of said direction switch when the duration of the said cycle is greater than the said predetermined duration, forward and reverse electrical actuators for selecting respectively forward and reverse drive, the direction switch being settable in one state for selecting the electrical actuator for forward drive and being settable in another state for selecting the electrical actuator for reverse drive, the first switching means being such that the said other state thereof enables setting of the direction switch to effect energization of the electrical actuator selected by the setting of the direction switch,

second switching means adapted to be so controlled in response to the said signal as to be set into one state thereof in response to a cycle of the said signal when the duration of the said cycle falls below a second predetermined duration, and to be set into another state thereof when the duration of the said cycle increases to exceed a third predetermined duration, a low gear ratio electrical actuator and a high gear ratio electrical actuator, the second switching means being such as, in operation, to effect selectively energization of the low gear ratio electrical actuator and the high gear ratio electrical actuator respectively depending upon which one of the said two states of the second switching means prevails.

4,316,396

MACHINE FOR THE MECHANICAL WORKING OF BAND SAWS

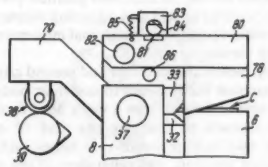
Vladimir V. Idel, Mukachevsky raion, selo Kolchino, Zakarpatskaya oblast, U.S.S.R.

Division of Ser. No. 773,752, Mar. 2, 1977, Pat. No. 4,175,452. This application Mar. 27, 1979, Ser. No. 24,446

Claims priority, application U.S.S.R., May 26, 1975, 2134705; Mar. 30, 1976, 2333522; Mar. 30, 1976, 2333523

Int. Cl.³ B23D *63/04*

U.S. Cl. 76—61 **2 Claims**



1. A machine for mechanical working of band saws comprising; a frame; a device mounted on said frame for gripping a band saw on the sides; a pitch feed mechanism for pitch feed of the saw on the frame; a drive for the machine; means for linking said pitch feed mechanism kinematically with said drive; tooth-setting tools; two arms having ends carrying the tooth-setting tools; an axle on said frame pivotally mounting said arms; means coactive with said drive for pivotally moving said arms for setting of the saw teeth; a pair of knives for cutting off the saw blade disposed downstream of said tooth-setting tools in the direction of pitch feed; one of said knives of the pair of knives being rigidly secured on said device for gripping the sides of the saw; linkage means for linking kinematically the other of said pair of knives to one of said arms for joint movement therewith during cutting off the saw blade and a subsequent withdrawal from a cutting zone to a neutral position before the pitch feed of the saw; said linkage means comprising an additional arm having an end carrying the other knife of said pair of knives; another axle pivotally mounting said additional arm and secured to the other of said arms extending in a

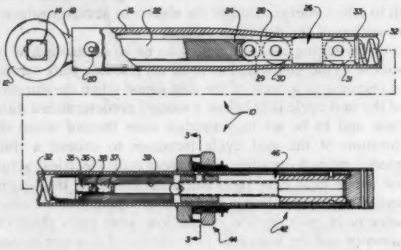
direction parallel to the direction of pitch feed of the saw; and a wedge surface of which is on said additional arm and another wedge surface on said other arm reciprocable relative thereto.

4,316,397

TORQUE WRENCH

Ray C. Skidmore, Chagrin Falls, Ohio, and Richard H. Skidmore, Naples, Fla., assignors to Skidmore Engineering Div. Buckeye Gear Company, Cleveland, Ohio

Filed Jul. 3, 1980, Ser. No. 165,546
Int. Cl.³ B25B *23/142*
U.S. Cl. 81—483 **16 Claims**



1. A torque wrench comprising
a main body having a fixed length,
a first adjusting means mounted for relative rotational movement with respect to said main body and constrained against axial movement relative to said main body,
a second adjusting means engaging said first adjusting means and operatively connected for joint rotational movement with said first adjusting means and for axial movement relative thereto,
said first and second adjusting means being operatively connected to provide, in response to joint rotational movement of said first and second adjusting means relative to said main body, for axial movement of said second adjusting means with respect to said main body to provide an axially directed force for adjusting the torque setting of said wrench,
locking means having an activated position preventing rotational movement of said first adjusting means and a deactivated position permitting rotational movement of said first adjusting means,
said locking means and said first and second adjusting means being mounted with respect to said main body to maintain a fixed wrench length from a work head forming one end of said wrench to the opposite end of said wrench, whether said locking means is in either said activated or deactivated position, and regardless of the relative positions of the first and second adjusting means.

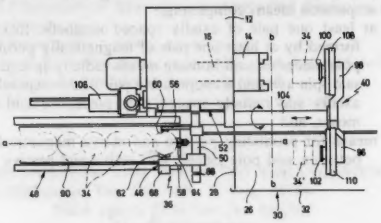
4,316,398

LOADING AND/OR UNLOADING DEVICE FOR MACHINE TOOLS, PARTICULARLY AUTOMATIC LATHES

Helmut F. Link, Aichwald, and Paul Waiblinger, Esslingen, both of Fed. Rep. of Germany, assignors to Index-Werke KG Hahn & Tessky, Esslingen, Fed. Rep. of Germany

Filed Jan. 28, 1980, Ser. No. 115,806
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1979, 2904088
Int. Cl.³ B23B *13/02*
U.S. Cl. 82—2.7 **13 Claims**

1. A device for loading and unloading a machine tool such as a lathe having at least one feeding device adapted to feed a workpiece to a transfer station and having a transport device for transporting the workpiece which is to be machined from the transfer station to a machining station defined by the work spindle of the machine tool, or vice versa, wherein the feeding device is provided on a first carrier which is pivotable about a pivoting axis disposed at right angles to the work spindle axis and said transport device has a second carrier carrying at least one workpiece clamping device and in which the second carrier is pivotable about an axis which is parallel with the work



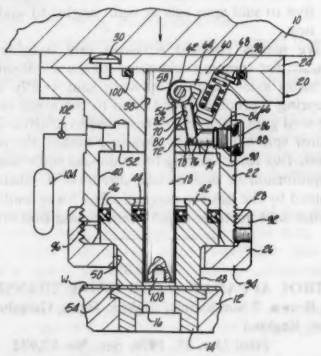
spindle axis, characterized in that the feeding device (**36** or **38**) comprises a workpiece gripper (**46**), means including drive means for mounting said workpiece gripper on said first carrier for movement around an axis parallel to the pivoting axis of the first carrier, and means mounting said second carrier for movement along its axis.

4,316,399

COMBINED PUNCH RETAINER AND FLUID ACTUATED STRIPPER

Bernard J. Wallis, 25200 Trowbridge Ave., Dearborn, Mich. 48124

Filed Apr. 4, 1980, Ser. No. 137,371
Int. Cl.³ B26D *7/06*
U.S. Cl. 83—137 **8 Claims**



1. A combined punch retainer and fluid actuated stripper comprising, a retainer body adapted to be mounted on a reciprocable die member, said body having an upper end and a lower end, a central vertical bore in said body extending to the upper end thereof and adapted to receive a punch, said body having a large cylindrical bore concentric with the punch bore and extending to the lower end of the body, a punch retained in said punch bore and extending downwardly to below the lower end of said body, a piston in said cylinder bore and surrounding said punch in sealed relation with the punch and the cylinder bore, said piston being movable vertically in said cylinder bore, means limiting movement of said piston in a downward direction to a position wherein the lower end of the piston is disposed below the lower end of said punch and in an upward direction to a position wherein the lower end of the piston is spaced at least slightly above the lower end of said body, means for directing a high pressure gas into the portion

of the cylinder above said piston, said body having a cavity at the upper end thereof adjacent and communicating with said punch bore, a cover plate on said body closing the upper ends of said cavity and the punch bore, a seal between the cover plate and the upper end of said body, said seal extending around said cavity and punch bore to prevent the escape of gas therefrom and means in said cavity for releasably retaining the punch in said punch bore.

4,316,400

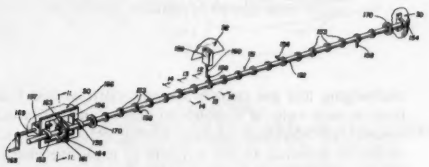
WOOD MEMBER CUTTING APPARATUS

George L. Mayo, Fort Worth, Tex., assignor to Stoddard H. Pyle and Wayne R. Roberts, both of Corvallis, Oreg.

Division of Ser. No. 112,530, Jan. 16, 1980, Pat. No. 4,277,998. This application Feb. 5, 1981, Ser. No. 231,663

Int. Cl.³ B27B *5/04*

U.S. Cl. 83—425.2 **3 Claims**



1. A wood member cutting apparatus comprising a base, a movable carriage on the base, saw gangs and wood member conveyors cooperatively mounted on the base and carriage, an integrated power drive means for the carriage and for said conveyors on the base, and a precision wood member length measuring and automatic carriage stop mechanism on the base, said mechanism comprising a rotational shaft extending longitudinally of the base, means to adjust the shaft axially along the base to a precision position, a plurality of axially equidistantly spaced and circumferentially equidistantly spaced radial stop pins on the shaft, and circumferential lockable locator means for the shaft enabling one radial stop pin at a time to be positioned on the shaft in the path of movement with the actuator element of a limit switch on the movable carriage to automatically stop the carriage at a position on the base corresponding to a required length measurement of a wood member being cut by said apparatus.

4,316,401

MUSIC SYNTHESIZER

Donald L. Tavel, 233 W. Westfield Blvd., Indianapolis, Ind. 46208, and Michael L. Beigel, Warwick, N.Y., assignors to Donald L. Tavel, Indianapolis, Ind.

Filed Sep. 7, 1979, Ser. No. 46,206

Int. Cl.³ G10H *5/00, 7/00*

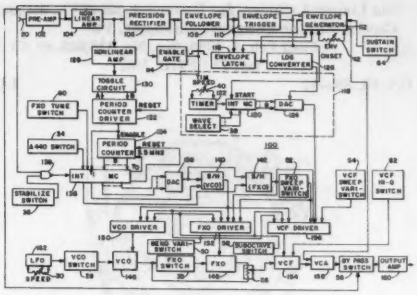
U.S. Cl. 84—1.01 **42 Claims**

1. A music synthesizer in which an input signal having a frequency manifesting a created sound controls the provision of a synthesized sound, said synthesizer comprising:

means for processing said input signal to provide control signals having a frequency related to the frequency of said input signal;

means for providing a series of clock signals at a frequency independent of and much higher than said control signals; and

means for counting the number of clock signals occurring between the provision of selected control signals and for providing signals to control the provision of said synthesized sound in response to the number of counted clock signals.



4,316,402

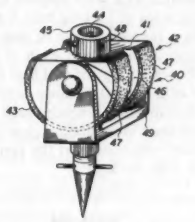
ADJUSTABLE END PIN FOR THE VIOLONCELLO AND THE STRING BASS

Richard Goldner, 3717 Toad Lake Rd., Bellingham, Wash. 98225

Filed Jan. 16, 1981, Ser. No. 225,845

Int. Cl.³ G10G *5/00*

U.S. Cl. 84—280 **8 Claims**



1. An adjustable end pin for the violoncello and the string bass comprising of:

a. a receiving member having a nonslip outer support surface at least a portion of which is arcuate, said receiving member including a cavity having a locking means for receiving and locking therein the existing end pin of a violoncello or string bass;

b. a yoke pivotally mounted to said receiving member and spaced away from said support surface for rotation thereabout; and

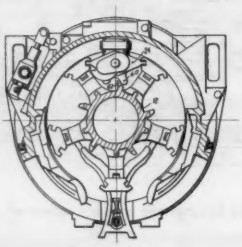
c. a pin means having first and second ends adjustably mounted to said yoke for relative movement with respect to said yoke, said first end having a point and extending from said yoke and said second end projected from said yoke and adapted to contact said support surface by adjusting said pin to restrict relative movement of the yoke.

4,316,403

GUN BOLT FOR A HIGH RATE OF FIRE REVOLVING BATTERY GUN

Robert G. Kirkpatrick, Shelburne; Ronald R. Snyder, Georgia, and Lincoln L. Sibley, Jr., Burlington, all of Vt., assignors to General Electric Company, Burlington, Vt.

Filed Feb. 4, 1980, Ser. No. 118,025
Int. Cl.³ F41D *7/02*
U.S. Cl. 89—12 **1 Claim**



1. A Gatling type gun including:
a housing,
a rotor journaled in said housing for rotation about its longitudinal axis and having fixed thereto
a plurality of pairs of tracks disposed in an annular row, the tracks of each of said pairs being mutually spaced apart by a first distance, and
a like plurality of sets of locking lugs disposed in an annular row,
a like plurality of gun bolts disposed in an annular row in said rotor and each disposed between the spaced apart tracks of a respective one of said pairs of tracks,
each of said gun bolts including
a bolt carriage having a pair of radially extending slides, each of said pair of slides being engaged with and supported by one of the tracks of a respective one of said pairs of tracks,
a bolt head carried by, and journaled for oscillation about its longitudinal axis with respect to said bolt carriage and having a set of locking lugs for releasable engagement with a respective one of said plurality of sets of locking lugs of said rotor, each of the locking lugs of said set of locking lugs of said bolt head having a radial extension of a second distance which is less than one-half said first distance whereby each of said locking lugs of said bolt head in oscillation clears the adjacent tracks of said rotor which support the respective slides of the respective bolt carriage.

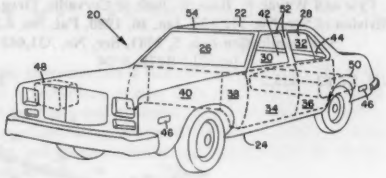
4,316,404

LIGHTWEIGHT ARMORED VEHICLE AND METHOD OF MAKING SAME

Richard C. Medlin, 4728 Goldfield, San Antonio, Tex. 78218

Filed Jun. 30, 1978, Ser. No. 920,715
Int. Cl.³ F41H *7/04*
U.S. Cl. 89—36 H **17 Claims**

17. An automobile having an enclosed passenger compartment with doors for entering and leaving said passenger compartment, having walls, ceiling and floors, wheels and an engine for turning of said wheels through a drive train and transmission to move said automobile, said automobile having improvements to resist attack comprising:
permanently installed bullet resistant windows for said said passenger compartment;
multi-layer polyglass sheets rigidly formed with a resin-catalyst mixture in combination with multi-layer ballistic cloth being installed in said doors and said walls of said passenger compartment, said multi-layer ballistic resistant cloth being further installed in said ceiling and floor of said automobile;
side walls of said automobile adapted by installing therein an outer layer of mutli-layer rigidly woven polyglass sheets and bonded thereto an inner layer of multi-layer ballistic resistant cloth to prevent penetration by projectiles, such as bullets fired by super power small arms;
a fuel tank of said automobile wrapped in multi-layer ballistic resistant cloth and a battery of said automobile encased in multi-layer rigidly woven polyglass sheet to prevent explosion; and
electrically ignited tear gas cannisters attached at a plurality of locations along said walls, switch means electrically connected between said battery and said cannisters for discharging tear gas radially through ports at said locations in said walls in response to closure of said switch means, said electrical ignition having electrical match means for creating an arc to ignite an explosive charge, said cannisters being retained in housing means mounted behind said ports to maintain discharge ends of said cannisters adjacent said ports;
said bullet resistant windows, multi-layer rigidly woven polyglass sheets, and multi-layer ballistic resistant cloth overlapping and securing said passenger compartment against penetration by most projectiles in event of attack thereby providing lightweight armor to protect passengers in said automobile without significantly decreasing mobility.

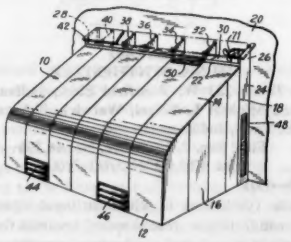


4,316,405

GREENHOUSE AND SOLARIUM STRUCTURERS AND RELATED METHOD

Christopher Esposito, Brooklyn, N.Y., assignor to Four Seasons Solar Products Corporation, Farmingdale, N.Y.

Filed Sep. 21, 1979, Ser. No. 77,786
Int. Cl.³ A01G *9/24;* **F24F** *7/00*
U.S. Cl. 98—33 R **15 Claims**



1. A greenhouse or solarium construction comprising glazing means defining a space adapted for accommodating botanical or animal life, said glazing means having an open side, structure means adapted at least partly to obturate said open side, spacing collar means between said glazing means and structure means for substantially obturating said open side except for an opening defined at an upper region of the glazing

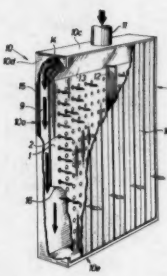
means between the glazing means and the structure means, and exhaust means to displace air from said space via the opening between the glazing means and said structure means, the spacing collar means including a plurality of horizontally aligned vertical channels coupled to and extending between said structure means and glazing means, the channels being spaced and parallel C-channels, the glazing means including a horizontal top edge portion and vertical end edge portions, and first and second of said channels extending along the end edge portions between the latter and said structure means, and other of said channels, which are substantially shorter than said first and second channels, extending between and spacing the top edge portion and said structure means, and insulation means in the first and second channels, at least some of the channels extending upwardly relative to said top edge portion and including sloped upper end portions sloping downwardly away from said structure means, said greenhouse or solarium construction further including shed means supported on said sloped upper end portions and extending in partially overlapping relation with said glazing means, at least one of said channels including means defining at least one screw hole and including a screw in said screw hole, having an axis parallel to the associated channel providing for attachment of said shed means.

4,316,406

FLOW-DISTRIBUTING DEVICE AND AN AIR-INTAKE SCREEN PROVIDED WITH SUCH A DEVICE

Leif I. Lind, Storsjövägen 7, 121 71 Johanneshov, Sweden

Filed Oct. 11, 1979, Ser. No. 83,979
Claims priority, application Sweden, Oct. 13, 1978, 7810734
Int. Cl.³ F24F *13/06*
U.S. Cl. 98—40 R **9 Claims**



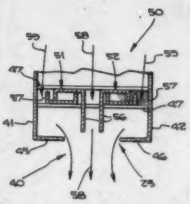
1. An air supply device comprising a substantially parallelepipedic screen having a rear side surface and a front perforated side surface, means for supplying fresh air to the interior of said screen, and a flow-distributing device forming an intermediate, planar plate in the screen, said flow-distributing device being arranged such that the supplied fresh air flows parallel to one side of said planar plate of said device, the plate having substantially uniformly distributed perforations and carrying deflecting means projecting from the one side of the plate into the air flow for dividing the air flow into a plurality of parallel part-flows of equal magnitude passing through the plate, said intermediate plate, together with the rear side surface, forming a pressure chamber for accommodating the air flow supplied via the air-supply means, said parallel part-flows of supplied air passing to a space between the other side of said plate and the front perforated side surface of said screen and passing through said front perforated side surface, said flow-distributing device coacting with said front perforated side surface so that low velocity part-flows depart from the screen.

4,316,407

JET PAIR WEIR GATE

Robert R. Lambert, Glendora, Calif., assignor to Air Factors West, Dublin, Calif.

Filed Jan. 8, 1980, Ser. No. 110,360
Int. Cl.³ F24F *13/06*
U.S. Cl. 98—40 D **1 Claim**



1. In an air diffuser assembly having a diffuser outlet below spaced walls defining an air flow path from a source to said outlet; said outlet being defined in part by the medial edge of outlet flanges extending horizontally inward from an opposing pair of said spaced walls; the width of said outlet, defined as the distance between the medial edges of the pair of said outlet flanges, being generally twice the width of one of said outlet flanges; said outlet and outlet flanges defining a first plane substantially coinciding with the plane of a suspended ceiling mounting said air diffuser assembly; said assembly including at least one diffusion weir assembly portion;

said diffusion weir assembly portion including a pair of nested elongated diffusion weir members; each of said members being a generally U-shaped imperforate channel consisting of a web portion and two flange portions; said web portion having a width greater than that of said outlet; means for mounting said weir members in opposed and nested relation in a second plane spaced above and generally parallel to said first plane; said members being together laterally moveable in said second plane to cooperate with said outlet flanges to control the direction of airflow from said outlet and being moveable relative to one another to vary the combined width of the pair of weir members and thus control the amount of airflow from said outlet, the improvement comprising:

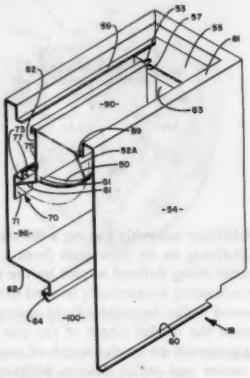
a jet weir assembly portion defining a second air flow path from a second, constant volume source to said outlet; including two pairs of nested elongated jet weir members of shorter length than said diffusion weir members; each of said jet weir members being a generally U-shaped imperforate channel consisting of a web portion and two flange portions; said web portion having a width greater than half that of said outlet; mounting means for mounting said jet weir members in laterally spaced pairs in a third plane spaced above and substantially parallel to said first plane such that each member in a pair is in an opposed and nested relation and such that the inverted member of each pair is mounted proximal the inverted member of the other pair such that the medial flange of each pair is depending toward said outlet; the medial flange of each pair having an extended length such that it substantially reaches said first plane and such that the extended length flanges, together, define control surfaces that act as a nozzle, thereby creating a jet flow through said outlet; said members of each pair being together laterally moveable in said third plane relative to the other pair and each member of a pair being laterally moveable relative to the other member of the pair and the two pairs, together, being laterally moveable relative to the outlet to cooperate with said outlet flanges to control the jet quality, volume, velocity, and direction of airflow from said outlet.

4,316,408

DAMPER ASSEMBLY FOR USE WITH AN AIR CONDITIONING SYSTEM

Theodore S. Bolton, Liverpool, and Richard D. Lang, Chittenango, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed May 19, 1980, Ser. No. 151,036
Int. Cl.³ F24F *13/00*
U.S. Cl. 98—41 R **9 Claims**



1. A device for directing the flow of a gaseous medium which comprises:

a housing having an inlet and at least one outlet, said device defining a medium flow path from the inlet to the outlet;

a pivotally mounted damper located to obstruct the medium flow path, said damper being rotated between various positions to effect differing impediments to medium flow along said path; and

means for securing the damper in a preselected position including a flexible leaf spring mounted to frictionally engage the damper such that an edge of the damper contacts the spring to maintain the damper in position, said leaf spring being frictionally engaged at both ends in an arcuate configuration such that an edge of the damper contacts the spring continually as the damper is rotated between positions.

4,316,409

CARBONATED BEVERAGE CONTAINER

Joan M. Adams, Fairview; Myron B. Shoaf, Cranbury, both of N.J.; Carl E. Bochmann, Cleveland, and Peter A. Basile, Hudson, both of Ohio, assignors to General Foods Corporation, White Plains, N.Y.

Filed Oct. 10, 1979, Ser. No. 83,737
Int. Cl.³ A23L *2/40*
U.S. Cl. 99—275 **13 Claims**

1. A pressurizable vessel for the preparation of a carbonated beverage from a water-based liquid and a solid carbonation source, comprising:

a. a container having an opening therein providing access to the contents thereof;

b. a cover for engaging and sealing the opening of said container, including a basket positioned interiorly of the cover for holding a quantity of a solid carbonation source above the level to which the container is normally filled with the water-based liquid, whereby the container may be filled with water, the basket loaded with a quantity of a solid carbonation source, and the cover applied, and sealed with respect to the container without resulting in contact between the solid carbonation source and water;

c. a vent valve provided in said cover to allow automatic and manual venting of excessive carbon dioxide from the interior of the pressurized container prior to disengagement of the cover from the container; and

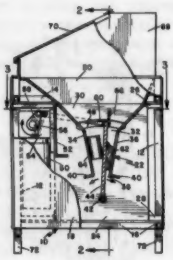
d. means for sealing the container to prevent the pressurized contents of the container from contacting atmosphere.

4,316,410

COMPACT CAN CRUSHER

Charles M. Davis, Jr., 23 The Point, Coronado, Calif. 92118

Continuation-in-part of Ser. No. 95,637, Nov. 19, 1979, abandoned. This application Jun. 30, 1980, Ser. No. 164,044
Int. Cl.³ B30B *15/14, 9/32*
U.S. Cl. 100—48 **14 Claims**



1. A compact can crusher, comprising:

a rigid supporting frame;

a can receiving chute mounted in said frame and having an upper entry throat and an open lower end;

said chute having spaced upright side plates and downwardly converging walls extending perpendicularly between the side plates, the walls including a fixed front wall;

a crusher plate pivotally mounted in said frame, said crusher plate having a hinge pin journalled in said side plates below the open lower end of the chute;

said crusher plate extending upwardly through the chute to swing into crushing engagement with said front wall and having drive pins extending from opposite sides of the upper end thereof;

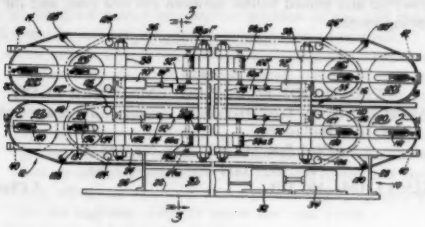
a drive motor mounted in said frame with a drive shaft extending on both sides thereof;

a crank on each end of said drive shaft, and a connecting rod coupling each crank to one of said drive pins to oscillate said crusher plate toward and away from said front wall.

4,316,411
HYDRAULIC CONTINUOUS PRESS

Clyde D. Keaton, 48 Dickinson St., Woodstown, N.J. 08098

Filed Dec. 17, 1979, Ser. No. 104,328
Int. Cl.³ B30B 15/16, 5/06
U.S. Cl. 100—50 11 Claims

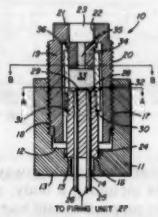


1. A press for simultaneously pressing and conveying a workpiece from an input to an output, a set of rails disposed side by side, a reaction member disposed opposite said set of rails in spaced relation and adapted to accept a workpiece between the set of rails and said member, first and second transverse actuating means connected respectively with a first group and a second group of said set of rails and adapted to alternately advance and retract said first group and said second group of rails relative to said rection member to alternately press and release said workpiece, first and second longitudinal actuating means connected respectively with said first group and said second group of rails and adapted for alternately advancing and retracting said first group and said second group of rails relative to said output to move said workpiece toward the output, and energizing means for energizing the first transverse actuating means and the first longitudinal actuating means in the advancing direction while energizing the second transverse actuating means and the second longitudinal actuating means in the retracting direction and vice versa, whereby said first group and said second group of rails alternately press and advance the workpiece, each of said first and second transverse actuating means being comprised of one or more fluid pressure actuators and each of said first and second longitudinal actuating means being comprised of one or more fluid pressure actuators.

4,316,412
LOW VOLTAGE NONPRIMARY EXPLOSIVE DETONATOR

Robert H. Dinegar, Los Alamos, N. Mex., and John Kirkham, Newbury, England, assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 5, 1979, Ser. No. 28,743
Int. Cl.³ E42C 13/00
U.S. Cl. 102—202.5 18 Claims

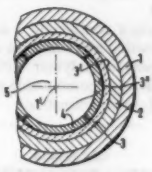


1. In a detonator employing only nonprimary explosives and low voltage hot bridge ignition, the improvement comprising use of an explosive train wherein a deflagration-to-detonation transition occurs.

4,316,413
GENERATOR FOR A SPIN-PROJECTILE

Peter Weidner, Breitenbrunn, and Dietmar Stützle, Lauf/Pegnitz, both of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany

Filed Feb. 4, 1980, Ser. No. 118,092
Claims priority, application Fed. Rep. of Germany, Feb. 7, 1979, 2904501
Int. Cl.³ F42C 11/02
U.S. Cl. 102—210 5 Claims

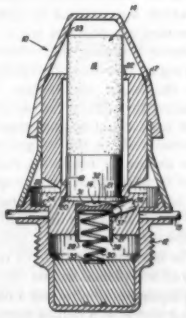


1. In a generator for the generation of electrical energy including a spin projectile and a piezo element in said spin projectile; the improvement comprising: said piezo element having a tubular configuration and contacting the interior of the projectile shell, and further being polarized radially relative to the longitudinal axis of said projectile; and core means being radially segmented and also being radially movably supported within said projectile shell so as to charge said piezo element during the rotational acceleration of said projectile.

4,316,414
FUZE

Gerald P. Hermanson, Maitland, Fla., assignor to Dayron Corporation, Orlando, Fla.

Filed Nov. 9, 1979, Ser. No. 93,021
Int. Cl.³ F42C 15/24
U.S. Cl. 102—247 16 Claims



1. A self-arming fuze comprising in combination:
a fuze casing;
ignitable material located in said fuze casing;
igniting member mounted in said casing for igniting said ignitable material upon receiving a predetermined impact;
movable arming member;
track means for guiding said movable arming member during movement; and
movable firing member biased toward said igniting member, said movable firing member having means to block said movable arming member from moving into an armed

position when said movable firing member is in one position and allowing the movement of said movable arming member into an armed position when in a second position, movement of said movable firing member against said biasing means being inertial movement relative to movement of said fuze casing in flight, whereby said fuze is armed during flight.

4,316,415

DETONATING CORD WITH FLASH-SUPPRESSING COATING

James J. Baker, Benson, Ariz., assignor to Apache Powder Company, Benson, Ariz.

Filed Mar. 27, 1979, Ser. No. 24,353
Int. Cl.³ C06C *5/04*
U.S. Cl. 102—275.8 **25 Claims**

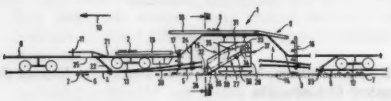
1. A detonating cord comprising a core of high explosive encased in a composition extrudable at safe temperatures and comprising a halogenated polymer with sufficient halogenation to prevent ignition of combustible materials adjacent and exterior to the cord upon detonation.

4,316,416

MOBILE APPARATUS FOR REPLACING OLD TRACK TIES BY NEW TRACK TIES

Josef Theurer, Vienna, and Friedrich Oellerer, Linz, both of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Aug. 27, 1979, Ser. No. 70,314
Claims priority, application Austria, Sep. 13, 1978, 6629/78
Int. Cl.³ E01B *27/02, 27/11*
U.S. Cl. 104—2 **6 Claims**



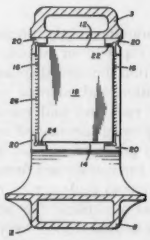
1. A mobile apparatus for replacing old track ties by new track ties resting on ballast, which comprises a track renewal train mounted for movement along a right of way consisting of an old track section, a new track section and an intermediate right of way section wherein the track is renewed, the train including a vehicle bridging the intermediate right of way section and having an upwardly recessed frame defining a free space between the frame and ballast, the vehicle carrying means for spreading the rails of the old and new track sections to a distance at least equal to the length of the ties and for guiding the spread rails in the longitudinal direction of the train, as well as means for removing the ties of the old track section arranged frontwards of the free space, means for laying the ties of the new track section arranged rearwardly of the free space, and a carrier frame arranged in the free space for equipment for lowering the level of, and planing, the ballast in a first zone of the intermediate right of way section to obtain a section of lowered and planed ballast therein, the ballast lowering and planing equipment including a ballast planing shield, a ballast conveying elevator, a ballast planing plate and a ballast dumping device, the ballast planing shield extending across the intermediate right of way section in the free space and having a width at least equal to the length of the ties of the new track section, the ballast planing shield having a front end for scraping engagement with the ballast in the first zone and extending obliquely upwardly to a trailing end, the ballast conveying elevator being associated with the ballast planing shield and extending therealong and obliquely upwardly substantially parallel thereto, the free space being of sufficient height to accommodate the elevator and the elevator extending over the width of the shield and having an input end adjacent the front end of the shield and an output end at the trailing end thereof, the ballast planing plate extending horizontally for engagement with the lowered and planed ballast between the first zone and the tie laying means, and the ballast dumping device being arranged to receive ballast from the output end of the elevator, the ballast dumping device bridging over the spread rails guided by said means and having ballast outlet means arranged to discharge the dumped ballast in another zone outside the lowered and planed ballast between the first zone and the tie laying means.

4,316,417

WELDED SIDE FRAME COLUMN WEAR PLATE

Albert E. Martin, Lancaster, N.Y., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jan. 14, 1976, Ser. No. 648,994
Int. Cl.³ B61F *5/12, 5/24, 5/50*
U.S. Cl. 105—197 DB **5 Claims**



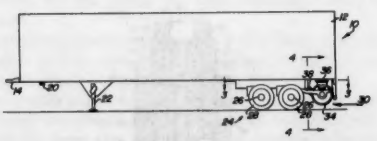
1. A railway car truck having side frames with an opening for receiving ends of a bolster, the opening having laterally spaced vertical columns adapted to receive a removable wear plate, a vertical wear plate disposed on at least one of said columns below an upper compression member and above a lower tension member, the plate being less than the vertical extent of the column and, having a wear surface and top and bottom edge surfaces and side edge surfaces connected at corners, there being L-shaped retainers disposed adjacent the corners for restraining vertical and horizontal movement of the wear plate and a weldment at least between the L-shaped retainers and portions of the adjacent edge surfaces of the wear plate with the wear plate in intimate contact with the column for securing the wear plate.

4,316,418

CONVERTIBLE RAIL HIGHWAY SEMI-TRAILER AIR CONTROLLED SUSPENSION SHIFTING SYSTEM

Eugene Hindin, Bala Cynwyd, Pa.; Alan R. Cripe, Richmond, Va., and Christopher A. Cripe, Coatesville, Pa., assignors to Bi-Modal Corporation, Greenwich, Conn.

Filed May 1, 1980, Ser. No. 145,748
Int. Cl.³ B60F *1/04;* **B61D** *3/10;* **B61H** *1/00;* **B62D** *61/12*
U.S. Cl. 105—215 C **5 Claims**



1. In a vehicle convertible from highway to railroad mode of travel and vice versa including a body; a rail wheel-set axle unit, air spring means supporting said body on said rail wheel-set axle unit adjacent the rear of the vehicle, a highway wheel-set axle unit, air spring means supporting said body on said highway wheel-set axle unit independently of, adjacent and in

front of said rail wheel-set axle unit and means interconnecting said body and said rail wheel-set axle unit operative to lift and retain said rail wheel-set axle unit to its elevated stored inoperative position in the highway mode, and means interconnecting said body and said highway wheel-set axle unit independently of said body and rail wheel-set axle unit interconnecting means and operative to lift and retain said highway wheel-set axle unit to its elevated stored inoperative position in the rail mode wherein the rail wheels are in a track engaging position,

an air control system operatively interconnecting a source of compressed air with said air spring means of said rail wheel-set axle unit and of said highway wheel-set axle unit to selectively inflate and deflate said rail wheel-set axle unit air spring means and the highway wheel-set axle air spring means and thereby raise said rail wheel-set axle unit into an elevated inoperative position and lower said highway wheel-set axle unit into a ground-engaging position for the highway mode of travel and vice versa,

said air control system comprising:

a. a three way mode selector valve connected to said source of compressed air for directing the application of pressure from said source of compressed air to said rail wheel-set axle unit air spring means when it is in a first position during a rail mode of travel, for directing the application of pressure from said source of compressed air to said highway wheel-set axle air spring means when it is in a second position during a highway mode of travel, and for preventing the application of pressure from said source of compressed air to both rail wheel-set axle unit and highway wheel-set axle unit air spring means when it is in a third position during a transfer from one mode of travel to the other, and

b. levelling valves to control air from said source of compressed air to said rail and highway wheel-set axle unit air spring means to maintain them at predetermined heights.

4,316,419

PLASTICS PALLET

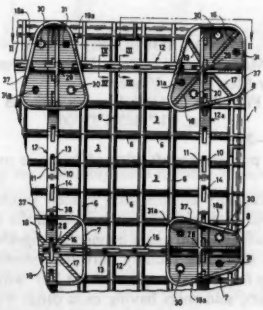
Ernst P. Cupido, Hardenberg, Netherlands, assignor to Wavin, B.V., Handellaan, Netherlands

Continuation-in-part of Ser. No. 748,306, Dec. 7, 1976, abandoned. This application Dec. 20, 1978, Ser. No. 971,223

Claims priority, application Netherlands, Dec. 9, 1975, 7514365; Dec. 9, 1975, 7514366

Int. Cl.[3] B65D *19/32*

U.S. Cl. 108—56.1 **6 Claims**



1. A pallet of plastic material, comprising

an upper loading surface being defined about its periphery by side edges;

a plurality of blocks secured to the pallet and extending on the underside of and projecting down from the upper loading surface;

located underneath the upper loading surface and spaced inwardly from the side edges thereof, there is at least one oblong shaped reinforcing channel;

walls which are attached underneath the upper loading surface for defining the channel; the channel having an upper side that is at least partly defined by the upper loading surface, the channel being shaped and adapted for removably receiving a reinforcing member;

a reinforcing member in said channel; means for locking the reinforcing member in said channel in a removable way, the locking means comprising one of the walls that defines the channel being recessed, whereby the reinforcing channel for accommodating the reinforcing member takes an undulatory configuration in its longitudinal direction, so that the wall clampingly engages the reinforcing member.

4,316,420

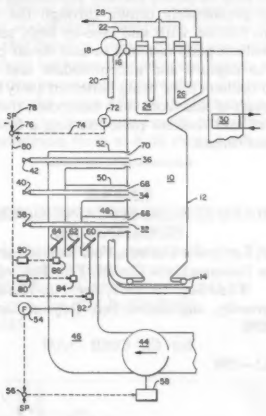
FURNACE HEAT ABSORPTION CONTROL

Edward L. Kochey, Colebrook, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Division of Ser. No. 958,225, Nov. 6, 1978, Pat. No. 4,237,825. This application Apr. 28, 1980, Ser. No. 144,747

Int. Cl.[3] F23K *1/00*; F23D *1/00*

U.S. Cl. 110—347 **2 Claims**

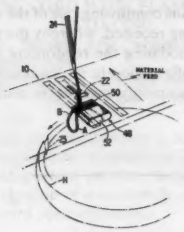


1. A method of operating a fossil fuel-fired steam generator, having a water wall lined furnace at firing rates below those corresponding to the minimum air flow rate comprising: conveying the minimum air flow to the furnace; injecting fuel in suspension at a location in the furnace; injecting a portion of said minimum air flow adjacent the injected fuel which is at least a stoichiometric quantity for the injected fuel; injecting the remainder of the air flow into the furnace at a location remote from the fuel injection location; measuring a parameter indicative of the furnace wall heat absorption; and adjusting the relative quantity of air introduced adjacent remote from said fuel injection location in response to said measured parameter; and increasing the furnace wall heat absorption by reducing the air adjacent said fuel injection with respect to the air introduced remote from said fuel injection location; and decreasing furnace heat absorption by increasing the air introduced adjacent said fuel injection location with respect to the air introduced remote from said fuel injection location.

4,316,421
ANTI-HALOING THROAT PLATE

Stanley J. Ketterer, Jamesburg, N.J., assignor to The Singer Company, Stamford, Conn.

Division of Ser. No. 940,935, Sep. 11, 1978, Pat. No. 4,266,494.
This application Oct. 17, 1979, Ser. No. 85,849
Int. Cl.³ D05B *57/08, 73/12*
U.S. Cl. 112—184 3 Claims

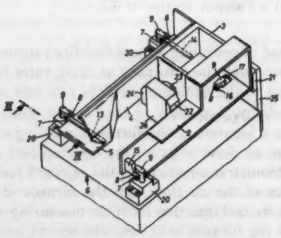


1. In a sewing machine having a bed, a reciprocatory thread carrying needle and a loop taker rotatably supported within said bed for grasping and expanding a loop of thread forming a work limb and a take-up limb as said needle penetrates the material being sewn, an anti-haloing device comprising a throat plate having an aperture formed therein through which said needle traverses, means on said throat plate for separating and for positively restraining said work limb from said take-up limb of said loop of thread thereby preventing said work limb from being prematurely drawn through the material being sewn due to friction with said take-up limb, said means comprising a resilient plate fastened to said throat plate, said resilient plate to capture and accommodate said work limb of thread, said resilient plate being deflected away from the throat plate as a result of said work limb interposed therebetween, the deflection of said resilient plate exerting a force against said work limb of thread.

4,316,422
COMBINED SEWING MACHINE HOUSING AND CLAMPING JIG

Willi Meier, Karlsruhe-Durlach, Fed. Rep. of Germany, assignor to Dorina Nahmaschinen GmbH, Fed. Rep. of Germany

Filed Sep. 10, 1979, Ser. No. 73,636
Claims priority, application Fed. Rep. of Germany, Sep. 8, 1978, 2839090
Int. Cl.³ C05B *73/00*
U.S. Cl. 112—258 7 Claims

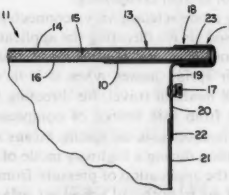


1. A combined housing particularly a sewing machine housing and a clamping jig therefor to position the housing for machining purposes, comprising a housing having a bed arm, a column with a bottom end connected to one end of said bed arm and extending upwardly therefrom and having an opposite top end, and an upper arm having an inner end connected to the top end of said column with an opposite outer end having a head portion said bed arm and upper arm having respective bottom and top ends opening outwardly, said housing including a plurality of bearing surfaces defined on the interior thereof located in exteriorly accessible locations including said bed arm and upper arm openings, and a clamping jig having an open top receiving surface onto which said housing is placed and having a movable clamping member disposed alongside each of said bearing surfaces and being movable to engage over said bearing surfaces and clamp said housing to said jig.

4,316,423
METHOD FOR MAKING A HYBRID WATERBED MATTRESS

Manfred A. Nordstrom, 1618 River St., Burlington, Iowa 52601

Filed Feb. 26, 1981, Ser. No. 238,419
Int. Cl.³ D05B *97/00;* A47C *27/08*
U.S. Cl. 112—262.1 8 Claims



1. A method for making the border and top panel of a hybrid waterbed mattress which comprises the steps of:

(a) sewing a flanging material to a top panel along first and second parallel lines, the first line being adjacent the edge of the mattress and the second line being spaced inwardly therefrom along the top panel;

(b) sewing the top half of a zipper simultaneously to the top panel and flanging material along a third line parallel with and spaced between the first and second lines;

(c) sewing the top half of the zipper simultaneously to the top panel and flanging material along about the first line;

(d) sewing the bottom half of the zipper to the side panel of the mattress, thereby permitting the top panel to be removed from the mattress by operation of the zipper; and

(e) sewing a tape over the edges of the top panel, flanging material and top half of the zipper along a fourth line parallel with and intermediate the first and second lines.

4,316,424
WIND PROPELLED CRAFT

Quentin M. McKenna, 2 Ave de la Boussole, Port La Galere, Theoule-sur-Mer, 06590, France

Filed Jan. 2, 1980, Ser. No. 109,085
Int. Cl.³ B63B *35/00*
U.S. Cl. 114—39 27 Claims

1. A wind propelled craft adapted to move over a surface comprising:

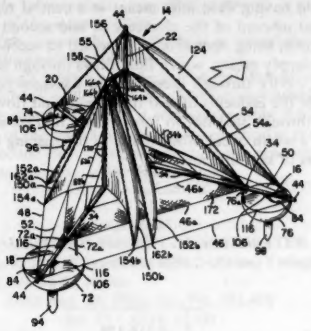
three substantially equidistantly spaced support members adapted to engage and be supported on the surface,

four substantially rigid spars connected together at a juncture and extending radially outward therefrom, each of said spars forming an angle of about 110° with each of the other spars, said spars having ends distal from the juncture,

a plurality of substantially equilength taut, flexible stays connected to and between each one of said spars and the other spars, respectively, said stays being connected to said spars at points substantially equidistant from said juncture so as to form with said spars a frame of substantially equilateral tetrahedral shape,

three of said spars extending laterally and downwardly from

the juncture and the fourth spar extending vertically upward from the juncture,



said support members being connected to said frame at points near the distal ends of the spars extending laterally and downwardly from the juncture, and

a sail connected to said frame.

4,316,425

LIFTING KEEL FOR SPORTING SAIL BOATS

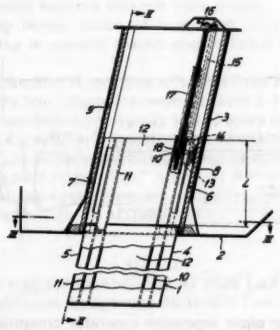
Jurgen Guido, Borsigstrasse 4, and Norbert Binzer, Ingenieur Rontgen-Str. 54, both of D-8402 Neutraubling, Fed. Rep. of Germany

Filed Aug. 3, 1979, Ser. No. 63,122

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1978, 2835085

Int. Cl.³ B63B *41/00*

U.S. Cl. 114—141 **22 Claims**



1. A lifting keel assembly for a sailboat, comprising:

a keel having forward and rearward longitudinal edges;

a shaft for receiving said keel within the sailboat;

a first sliding shoe on the upper portion of one of said longitudinal edges of said keel, said first shoe having two sides with protruding V-profiles;

a second sliding shoe on the upper portion of the other of said longitudinal edges of said keel;

a first prismatic guide along the interior of said shaft, said first guide having opposing guide surfaces in an inner double V-profile corresponding to the protruding V-profiles of said first sliding shoe, said guide surfaces enclosing and limiting forward, backward and sideways movement of said first shoe; and,

a second prismatic guide along the interior of said shaft, said second shoe being received between two opposing surfaces on said second guide.

4,316,426

STRUCTURE FOR THE MOORING OF YACHTS AND SIMILAR CRAFT

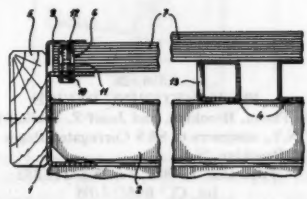
Pieter Meeusen, Barendrechtseweg 30, 2992 XB Barendrecht, Netherlands

Filed Apr. 10, 1979, Ser. No. 28,922

Claims priority, application Netherlands, Jan. 19, 1979, 7900463

Int. Cl.³ B63B *35/00*

U.S. Cl. 114—263 **5 Claims**



1. A structure for berthing marine craft comprising longitudinal beams and transverse boards for walking thereon between such beams, characterized in that an elongated retaining strip extends parallel to and above the longitudinal beams and engages the upper sides of the terminal edges of the boards to retain them in vertical direction, the retaining strips extending both above and alongside the transverse terminal edges of the boards, and in that fastening means extend upwardly from the longitudinal beams between two adjacent boards and engage the retaining strips in order to secure them and to press them downwardly onto the upper sides of the terminal edges of the transverse boards, the transverse boards being free from any member that penetrates them to hold them in place.

4,316,427

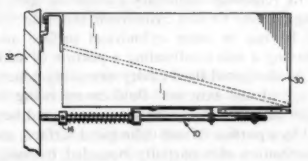
DEPLETION INDICATING MECHANISM FOR A STORAGE BIN

Robert H. Sand, Canton, Conn., assignor to The Vulcan Radiator Company, South Windsor, Conn.

Filed Jun. 30, 1980, Ser. No. 164,184

Int. Cl.³ B65D *91/00*

U.S. Cl. 116—215 **17 Claims**



1. In a depletion indicating mechanism for attachment to a storage bin which is pivotally supported above its center of gravity in a fixed frame structure, said indicating mechanism comprising:

means defining an elongated member, said member having a first and second end and including a flange adjacent the first of said ends,

a mounting base with collars for slidably receiving said elongated member, said elongated member being slidable along its longitudinal axis,

a compression spring received loosely about said elongated element and imposing a force between said flange and one

of said collars of said base so that when said indicating mechanism is mounted to said storage bin and said first end of said elongated member engages said fixed structure, said spring holds said bin in an upper elevated tilt position in opposition to the gravitational bias of the center of gravity of said bin when said bin is depleted, said spring holding said bin in a lower elevated position when said bin is filled to capacity, and

means for indicating angular displacement of said bin between said upper and lower elevated positions.

4,316,428

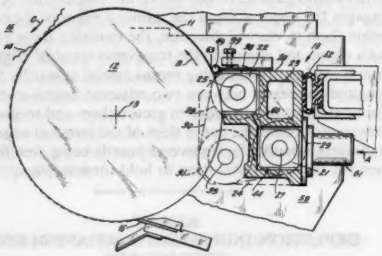
FLUID METERING DEVICE

Stephen S. Flaum, Brooklyn, and Jozef Z. Zielinski, Flushing, both of N.Y., assignors to S&S Corrugated Paper Machinery Co., Inc., Brooklyn, N.Y.

Filed Dec. 1, 1980, Ser. No. 211,832

Int. Cl.³ B05C *1/08*

U.S. Cl. 118—203 **10 Claims**



1. Fluid metering means including a fluid carrying cylinder for applying a fluid film to an element moving relative to said cylinder; said fluid carrying cylinder being mounted for rotation on its relatively stationary cylindrical axis; shoe means extending parallel to said cylindrical axis; said fluid carrying cylinder having an outer cylindrical surface and said shoe means having a side confronting a portion of said cylindrical surface; an elongated fluid cavity extending generally parallel to said cylindrical axis; said fluid cavity being formed by a depression in said side of said shoe means and being partially bounded by a portion of said cylindrical surface; and elongated fluid distribution slot partially bounded by said cylindrical surface and positioned along the downstream edge of said fluid cavity; means movably mounting said shoe means to permit said fluid distribution slot to vary in thickness; biasing means urging said fluid distribution slot to close; an elongated fluid manifold; means defining a plurality of passages connecting said cavity with said manifold; said passages being distributed along the length of said cavity and constituting fluid outlet means for said manifold; first means including spaced end dam elements disposed in said cavity and mounted for movement between positions near the ends thereof and selected positions inboard thereof; second means including spaced end dam elements disposed in said manifold and mounted for movement between positions near the ends thereof and selected positions inboard thereof in relation to movement of the dam elements of said first means; the dam elements of said first and said second means being positionable inboard of some of said passages; said manifold having fluid inlet means at a central region thereof disposed inboard of the elements of said second means; said inlet means being operatively connected to receive fluid from a fluid supply means, which fluid flows through said manifold to said cavity through those of said passages positioned inboard of the elements of said first means and flows from said cavity through said slot to form a fluid film on said cylinder having a width equal substantially to the spacing between the elements of said first means.

4,316,429

Patent Not Issued For This Number

4,316,430

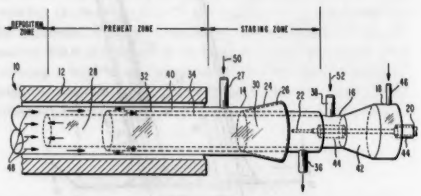
VAPOR PHASE DEPOSITION APPARATUS

Stuart T. Jolly, Yardley, Pa., and John P. Paczkowski, Kingston, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Sep. 30, 1980, Ser. No. 192,476

Int. Cl.³ C23C *13/08*

U.S. Cl. 118—725 **10 Claims**



1. A vapor phase deposition apparatus, comprising:

a reactor tube, having an open end;

means for heating a portion of the reactor tube which is displaced from said open end;

a jacketed assembly tube, having first and second open ends and being movable to a position which is coaxial within said reactor tube, such that when it is in said coaxial position; the first end of the assembly tube is within the heated portion of the reactor tube, the second end of the assembly tube extends from the open end of the reactor tube, and the assembly tube forms an annular channel with the reactor tube;

means for sealing said channel, in proximity to the open end of the reactor tube and the second end of the assembly tube;

a reactor tube gas inlet, in proximity to the open end of the reactor tube, providing a passage to said channel;

a vent, providing a passage to the jacketed portion of the assembly tube in proximity to the second end of the assembly tube;

an assembly tube gas inlet, providing a passage to a central portion of the assembly tube;

a bearing/plug assembly, mountable so as to seal the second end of the assembly tube; and

a rod, having a substrate holder on the end thereof, said rod being slidably mounted within the bearing assembly such that the substrate holder is movable, within the central portion of the assembly tube, from a position in proximity to the second end of the assembly tube to a position within the heated portion of the reactor tube.

4,316,431

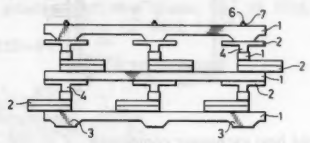
ARTIFICIAL FISH-GATHERING UNDERWATER REEF

Koichi Kimura, 16-6, Mikunihonmachi 2-chome, Yodogawa-ku, Osaka-shi, Osaka-fu, Japan

Filed Aug. 29, 1980, Ser. No. 182,496

Int. Cl.³ A01K *61/00*

U.S. Cl. 119—3 **4 Claims**



3. An artificial fish-gathering reef comprising:

a plurality of interconnected reef forming layers, each said layer having a substantially horizontal extent and being vertically spaced apart from the adjacent layer;

each said layer including plural transverse interconnection means aligned in mutually spaced apart relation, and plural plate means disposed in fixed relation to each interconnection means at intervals therealong so that an open space exists between adjacent plate means;

upstanding means associated with each plate means and extending in vertical spaced apart relation to the plate means;

each reef forming layer being separated from adjacent said layers by said upstanding means to form a stack of such layers maintained in mutually spaced apart relation; and

each reef forming layer being rotated a certain fixed extent relative to the adjacent layer, as viewed downwardly, so that the plate means of each said layer are vertically overlaid and said open spaces are vertically aligned to admit sunlight through the artificial reef.

4,316,432

BATTERY CAGE ARRANGEMENT FOR LAYING HENS

Josef H. Kuhlmann, Konigstrasse 51, D-4401 Laer, Fed. Rep. of Germany

Filed Oct. 1, 1979, Ser. No. 80,493

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1979, 7920942[U]

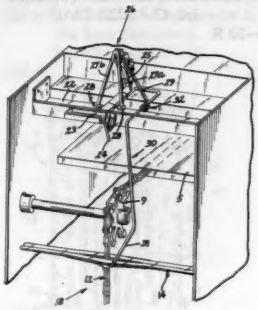
Int. Cl.³ A01K *3104;* B65G *45/02*

U.S. Cl. 119—22 **5 Claims**

1. Dung removal conveyor for multideck poultry battery-nest installations having upper and lower decks with roost grates and with droppings plates, arranged under the roost grates, across which can be displaced dung removal conveyors having upper and lower runs, each dung removal conveyor consisting of a drawing means bearing scraper crosspieces and led over upper and lower guide pulleys, and looping around the installation in a longitudinal direction so that the upper conveyor runs sweep over the droppings plates of the upper deck and the lower conveyor runs sweep over the droppings plate of the lower deck, characterized by

(a) a single-chain conveyor as a dung removal conveyor having a central draw chain to which are centrally connected by eyelets the scraper crosspieces; and

(b) an oil pan above the upper guide pulley of each dung removal conveyor, with an oil dispensing contrivance



actuated by contact with said crosspieces which feeds oil onto the draw chain in the region of the guide pulley, said oil dispensing contrivance including two plungers, of which one loads an intermediate oil pan and the other the eyelet of the scraper crosspiece.

4,316,433

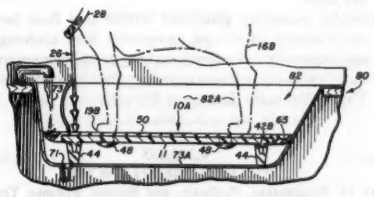
ANIMAL WASHING STAND

Kenneth B. Hebert, 1200 Dixon Rd., Little Rock, Ark. 72206

Filed Jan. 21, 1980, Ser. No. 113,469

Int. Cl.³ A01K *13/00*

U.S. Cl. 119—158 **4 Claims**



1. An animal bathing stand adapted to be disposed within a wash basin or the like, said stand comprising:

a rigid, generally planar central supporting surface;

foot means for elevating said central supporting surface a predetermined distance above a lowermost surface within said basin, said foot means comprising a plurality of nubs integrally attached to said supporting surface and stand-offs selectively attachable to said nubs for varying the height at which said central surface may be positioned within said basin;

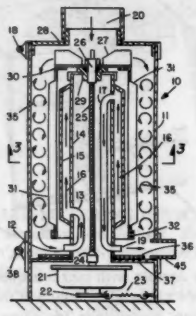
resilient non perforated pad means disposed on said supporting surface for providing firm footing for an animal to be washed, said pad means including a peripheral skirt for adapting said stand for use in differing sizes of basins, said skirt provided with a plurality of spaced-apart drain holes; and,

means for coupling leash means to said stand whereby to restrain said animal to be washed.

4,316,434
METHOD AND APPARATUS FOR IMPROVING HEAT TRANSFER

Frank W. Bailey, New York, N.Y., assignor to Bailey Burners, Inc., Haskell, N.J.

Filed Feb. 13, 1980, Ser. No. 120,978
Int. Cl.³ F22B 33/00
U.S. Cl. 122—20 B 16 Claims



1. A process for improving convective heat exchange between a generally cylindrical exchanger and surrounding fluid the steps of

a. mounting a pervious cylindrical stirring mechanism with a single end support baffle and central rotary drive means for rotation in the fluid boundary layer surrounding said generally cylindrical exchanger,

b. rotating said pervious stirring mechanism with external power delivered through said central rotary device means and single support baffle,

c. generating hydrodynamic bearing support for a portion of said pervious cylindrical stirring mechanism relative to said generally cylindrical exchanger through rotation in said fluid boundary layer,

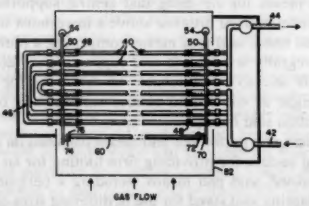
d. maintaining a rotary stirring velocity in said fluid boundary layer,

whereby instability generated within said fluid boundary layer assures improved convective heat exchange with said generally cylindrical exchanger and convective vorticity exchange with surrounding fluid in accordance with Taylor Vorticity Transport Principle.

4,316,435
BOILER TUBE SILENCER

Brian H. Nagamatsu, Peabody, and Barney Rolsma, Topsfield, both of Mass., assignors to General Electric Company, Lynn, Mass.

Filed Feb. 27, 1980, Ser. No. 125,188
Int. Cl.³ F22B 15/00
U.S. Cl. 122—235 F 7 Claims



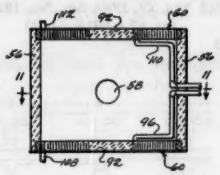
1. A heat exchange apparatus comprising a gas carrying duct having a plurality of fluid carrying tubes disposed across the duct, said heat exchange apparatus having an upstream end and a downstream end with respect to gas flow through the duct and further including:

a single row of baffles disposed across said duct; each baffle having an equivalent cross section height substantially equal to or greater than the diameter of a fluid carrying tube; and, said single row of baffles being spaced upstream from the first row of fluid carrying tubes at a minimum distance of about twice the equivalent cross section height.

4,316,436
HEAT EXCHANGER

Roy E. McAlister, 5285 Red Rock, North, Phoenix, Ariz. 85018

Continuation of Ser. No. 774,501, Mar. 4, 1977, abandoned. This application Jan. 24, 1979, Ser. No. 6,240
Int. Cl.³ F22D 5/26
U.S. Cl. 122—451 S 11 Claims



1. A fluid heat exchanger comprising

a plurality of elongated strips of rigid heat conductive material,

each of said strips having a cross-sectional configuration which is elongated in a direction transverse to the elongated extent of the strip so as to provide a pair of spaced relatively thin end edges and a pair of relatively wide opposed surfaces extending between said end edges,

said strips being generally transversely aligned and wound into a coil formation in which each of the surfaces of each strip is disposed in facing relation to the opposite surface of an adjacent strip in the coil,

each pair of facing surfaces including passage defining portions and force transmitting portions,

certain of the strips having both end edges thereof sealingly secured to the corresponding end edges of an adjacent strip so as to define with the passage defining portions of the facing surfaces associated therewith longitudinal fluid passage means having a coil formation flow direction extending generally in the direction of longitudinal extent of said strips,

certain of said strips having both end edges thereof disposed out of sealing engagement with corresponding end edges of the adjacent strip so as to define with the passage defining portions of the facing surfaces associated therewith transverse fluid passage means having a flow direction extending generally in a direction transverse to the direction of longitudinal extent of the strips,

the force transmitting portions of each pair of facing surfaces being disposed in force transmitting relation with respect to one another in the direction said facing surfaces face one another so that forces created by the fluid pressure and temperature conditions within said fluid passage means tending to deform said strips in said facing directions are resisted to thereby prevent deformation which would otherwise occur in the absence of said force transmitting relationship and permit the utilization of wall thicknesses less than that required to be self-sustaining in order to prevent such deformation,

means for supporting said coil formation including the end loops thereof,

means for directing heated fluid into and out of said transverse fluid passage means, and

means for cyclically introducing successive incremental

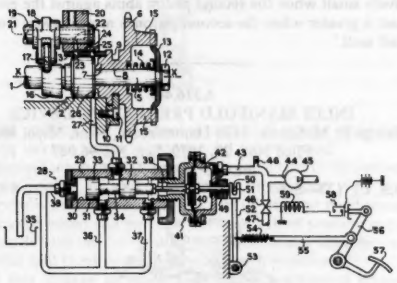
fluid portions to an inlet end of said longitudinal fluid passage means so that such incremental fluid portions will flow to an outlet end thereof in said coil formation direction with a peristaltic action by virtue of the pressure field developed therein as a result of heat addition thereto through heat exchange with the heated fluid in said transverse fluid passage means.

4,316,437

ACCELERATION CONTROLLING DEVICE FOR AN AUTOMOBILE VEHICLE

Bernard Bertrand, Vernouillet, France, assignor to Automobiles Peugeot, Paris, France

Continuation of Ser. No. 859,209, Dec. 9, 1977, abandoned. This application May 30, 1980, Ser. No. 154,991
Claims priority, application France, Dec. 29, 1976, 76 39459
Int. Cl.³ F01L *1/34*
U.S. Cl. 123—90.18 **6 Claims**



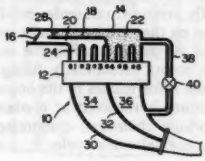
1. An acceleration controlling device for an automobile vehicle comprising an accelerator pedal, an internal combustion engine having a camshaft which is operative to achieve variation in the timing and extent of opening of cylinder valves which are associated with the camshaft and controlled by the camshaft, axial shifting means combined with the camshaft for axially shifting the camshaft, modulating means including a slide valve which is combined with the shifting means for modulating the action of said shifting means, means for controlling said modulating means as a function of the position of the accelerator pedal, said axial shifting means for the camshaft comprising a fixed cylinder, a piston cooperative with the fixed cylinder and defining a chamber, means for feeding oil employed for lubricating the engine to said chamber, means connecting the chamber to discharge through said modulating means and comprising means defining a discharge orifice, mechanical means connecting said slide valve to the accelerator pedal, a source of pressure which represents the speed of the engine, a pressure-responsive vessel which is connected to said source, said vessel having a movable diaphragm connected to the slide valve of the modulating means, the mechanical means connecting said slide valve to the accelerator pedal comprising a connecting rod connecting the slide valve to the diaphragm of the vessel, an extension of said rod extending beyond said diaphragm, a pivotal lever having an end portion, said rod extension being pivoted to the end portion of the pivotal lever, the accelerator pedal having an arm and elastically yieldable means and a rod connecting the accelerator pedal arm to said end portion of the lever.

4,316,438

INTERNAL COMBUSTION ENGINE

Haruhiko Iizuka, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed May 29, 1979, Ser. No. 43,104
Claims priority, application Japan, Jan. 31, 1979, 54-9887
The portion of the term of this patent subsequent to May 6, 1997, has been disclaimed.
Int. Cl.³ F02D *17/00*
U.S. Cl. 123—198 F **3 Claims**



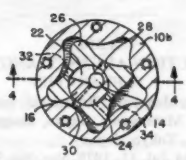
1. An internal combustion engine comprising a plurality of cylinders split into first and second groups, an air intake passage having therein a throttle valve and divided at its portion downstream of said throttle valve to form first and second intake passages isolated from each other for passing therethrough air to said first and second groups of cylinders, respectively, first valve means provided in said second intake passage for opening and closing the same, an exhaust passage divided at its upstream portion to form first and second exhaust passages for passing therethrough the exhaust gases discharged from said first and second groups of cylinders, respectively, an exhaust gas recirculation passage connected at its inlet end to said second exhaust passage and at its outlet end to said second intake passage, second valve means provided in said recirculation passage for opening and closing the same, and control means responsive to engine load conditions for closing said first valve means to prohibit air flow to said second group of cylinders and opening said second valve means to allow recirculation of a portion of the exhaust gases discharged from said second group of cylinders when said engine is under low load conditions.

4,316,439

ROTARY ENGINE WITH INTERNAL OR EXTERNAL PRESSURE CYCLE

Joe W. Tyree, 3201 SW. 110th, Seattle, Wash. 98146

Filed Mar. 10, 1969, Ser. No. 805,615
Int. Cl.³ F02B *53/00*
U.S. Cl. 123—246 **3 Claims**



1. A rotary mechanism for fluid pumps, fluid motors, combustion engines or the like comprising:

housing means forming an internal surface means,

valve shaft means mounted in the housing and provided with an eccentric means,

a rotor journalled on the eccentric portion for rotation about its axis while the rotor axis describes a planetary motion relative to the axis of the housing, the rotor having projecting sealing means disposed intermittently around the outer periphery of the rotor in sealing engagement with

the internal surface means of the housing thereby forming a plurality of variable volume working chambers between the rotor and housing means, and

inlet and outlet passages communicating with each of the working chambers disposed within the eccentric valve shaft and rotor with opening and closing of the inlet and outlet passages to each working chamber controlled by rotation of the rotor relative to the eccentric valve shaft means,

the internal surface means of the housing means has a plurality of symmetrically arranged circumferentially spaced concave lobe portions and the rotor has a plurality of symmetrically arranged circumferentially spaced convex lobe portions on the peripheral outer surface, there being one less lobe on the rotor than the housing means, the lobes of the rotors substantially filling the lobes of the housing as the rotor rotates in the housing,

an air-fuel mixture is received at predetermined intervals into the working chambers, compressed, expanded and released in a normal work cycle.

4,316,440

KNOCK DETECTING APPARATUS FOR INTERNAL COMBUSTION ENGINE

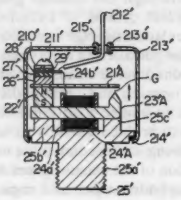
Hiroaki Yamaguchi, Anjo; Tadashi Hattori, and Yoshinori Ootsuka, both of Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Nov. 28, 1979, Ser. No. 98,247

Claims priority, application Japan, Apr. 28, 1979, 54-53142

Int. Cl.³ G01L *23/22, 33/22;* F02P *5/14*

U.S. Cl. 123—428 **5 Claims**



1. A knock detecting apparatus for internal combustion engines comprising:

a plurality of vibration detectors having different resonance characteristics each so as to detect a knocking vibration in one of a plurality of different frequency bands and generate a vibration output corresponding to said one frequency band, and

means for combining the vibration outputs of said vibration detectors to produced a cumulative output.

4,316,441

FUEL INJECTION ADVANCE ANGLE CONTROL APPARATUS

Toru Sakuranaka; Masayoshi Kobayashi, and Sachio Nakagawa, all of Higashi Matsuyama, Japan, assignors to Diesel Kiki Company, Ltd., Tokyo, Japan

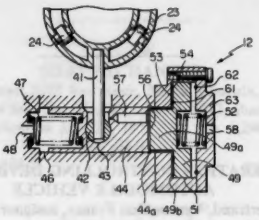
Filed Jul. 11, 1979, Ser. No. 56,567

Claims priority, application Japan, Sep. 29, 1978, 53-133561[U]

Int. Cl.³ F02D *1/12*

U.S. Cl. 123—502 **5 Claims**

1. A fuel injection control apparatus for an engine including a housing having a first bore, a second bore having an end wall, the first bore colinearly communicating with the second bore through said end wall, a diameter of the second bore being larger than a diameter of the first bore, a first piston slidable in the first bore and being connected so that a fuel injection advance angle of the apparatus corresponds to a position of the first piston, a second piston slidable in the second bore, a first spring urging the first piston toward abutment with the second piston, a second spring urging the second piston toward abutment with said end wall, engine driven pump means for pumping fuel at a pressure which increases with engine speed and a passageway connecting the pump means with a space between adjacent ends of the first and second pistons respectively, characterized by comprising an annular seal coaxially disposed



between said end wall of the second bore and the second piston, the inner diameter of the seal being larger than the diameter of the first bore and the outer diameter of the seal being smaller than the diameter of the second bore, whereby the fluid pressure receiving area of the second piston is relatively small when the second piston abuts against the end wall and is greater when the second piston is moved away from the end wall.

4,316,442

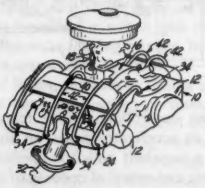
INLET MANIFOLD PREHEATING DEVICE

George P. McGinnis, 3426 Hammerberg, Flint, Mich. 48507

Filed Nov. 20, 1979, Ser. No. 96,047

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—546 **8 Claims**



1. An inlet manifold preheating device for internal combustion engine having an inlet manifold and an exhaust manifold, said device comprising at least a first heat conductive probe mounted in said inlet manifold and having a portion disposed projecting within said inlet manifold, a second heat conductive probe mounted in said exhaust manifold and having a portion disposed projecting within said exhaust manifold, and heat conductive means connecting said first probe to said second probe, wherein each of said probes is a single metallic elongated member having a threaded peripheral portion engaged with an internally threaded aperture through a wall of each of said manifolds and said heat conductive means is a metallic conduit having an end connected to one of said probes and another end connected to the other of said probes.

4,316,443

BOW STRING RELEASE AID

Pack Giacomo, Box 584, Krebbs, Okla. 74554

Filed Jun. 24, 1980, Ser. No. 162,447

Int. Cl.³ F41B *5/00*

U.S. Cl. 124—35 A **10 Claims**

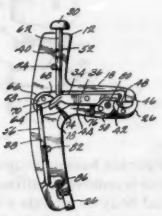
1. A release device for a bow string comprising:

(1) a generally T-shaped housing having a central portion

and first and second arm portions respectively extending outwardly from said central portion to first and second free ends, said first and second arm portions being contoured for gripping by a hand, said T-shaped housing having a generally T-shaped passageway extending through said first and second arm portions and said central portion, said central portion having an open end and a recess for receiving a flexible element, said recess communicating with the central portion of said passageway;

(2) latch means, mounted within said housing at said recess for selective engagement with the flexible element, for alternate opening and closing thereof to alternately retain and release the flexible element with respect to said recess;

(3) first mechanical linkage means, including a first part disposed in the first arm portion of said passageway and a second part disposed in said central portion of said passageway, engageable with said latch means and movable between a first position and a second position, for closing said latch means when said first linkage means is in said



first position and for opening said latch means when said first linkage means in said second position; and

(4) second mechanical linkage means disposed in the second arm portion of said passageway, engageable with and operative through said second part of said first mechanical linkage means and movable between a third position and a fourth position, for opening said latch means when moved from said third position to said fourth position;

said first linkage means including first mechanical means, disposed at said first free end and engageable by one of the group consisting of a finger other than the thumb and the thumb of said hand when said housing is gripped by said hand, for moving said first linkage means from said first position to said second position;

said second linkage means including second mechanical means, disposed at said second free end and engageable by the other of said group when said housing is gripped by said hand, for moving said second linkage means from said third position to said fourth position.

4,316,444

STOVE CONSTRUCTION

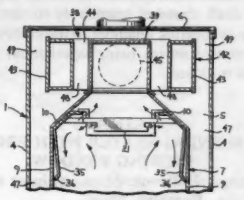
Russell C. Gullickson, 745 Georges Ave., Brookfield, Wis. 53005

Continuation-in-part of Ser. No. 960,037, Nov. 13, 1978, abandoned, which is a continuation-in-part of Ser. No. 832,336, Sep. 12, 1977, abandoned. This application Nov. 28, 1979, Ser. No. 98,078

Int. Cl.[3] **F24C** *1/14, 15/28;* **F24B** *5/00;* **F24H** *3/00*

U.S. Cl. 126—77 **7 Claims**

1. A stove construction, comprising a firebox defining a combustion chamber for primary combustion of combustible material, said firebox having an exhaust gas outlet in its upper end communicating with the combustion chamber, a preheat manifold disposed within the upper portion of the combustion chamber and defining a pre-heat chamber communicating with the atmosphere whereby air is drawn from the atmosphere into said preheat chamber and introduced into said combustion chamber, a wall connected to said firebox and spaced from the manifold to provide a passage therebetween for discharge of gases to the outlet, said wall sloping upwardly and inwardly in a direction toward said manifold, a flange extending inwardly from the sloping wall, the inner edge of the flange being spaced from the side edge of the manifold and the space between said inner edge of the flange and the side edge of the manifold constituting said passage, said manifold having a series of apertures communicating with said pre-heat chamber and facing said sloping wall, air being drawn from the atmosphere into said manifold being preheated in said pre-heat chamber and thereafter being discharged through said apertures toward



said sloping wall and into contact with the waste gases of combustion passing upwardly through said passage, and a combustion member disposed beneath said sloping wall and spaced inwardly from the wall of the firebox, said construction effecting a downwardly recirculation of the mixture of combustible waste gases and air along the combustion member toward the primary combustion region to achieve substantially complete combustion of the combustible waste gases.

4,316,445

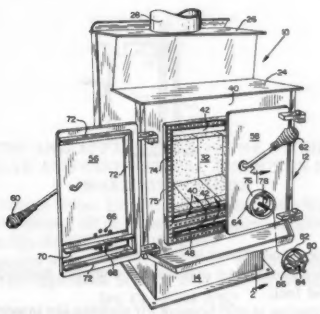
COMBUSTION AIR INTAKE SYSTEM FOR WOOD-BURNING STOVE

Larry D. Elsiminger, Sweet Home, Oreg., assignor to Sweet Home Stove Works, Inc., Sweet Home, Oreg.

Filed May 21, 1980, Ser. No. 151,823

Int. Cl.[3] **F24B** *5/00*

U.S. Cl. 126—77 **4 Claims**



1. A wood-burning apparatus for heating a room of a dwelling comprising:

a firebox having a front wall and a major opening in said front wall for access to the firebox from the room for loading logs or the like into the firebox;

door means for closing the opening, the door means and the firebox defining the walls of a combustion chamber;

means for carrying combustion gases from the combustion chamber to the exterior of the dwelling;

first wall means defining a preheating chamber adjacent to the combustion chamber;

air intake means for communicating air from outside the dwelling into the preheating chamber;

second wall means defining a draft chamber, the second wall means forming a part of the door means, the draft chamber being defined on the exterior of the door means, the second

wall means including first port means providing fluid communication between the preheating chamber and the draft chamber and second port means providing fluid communication between the draft chamber and the combustion chamber, the first and second port means being formed by holes through the door means, the three chambers otherwise being isolated from each other and from the room when the door means is closed; and

draft control means controllable from the room for varying the size of the draft chamber selectively to restrict the flow of air from the preheating chamber to the combustion chamber, the draft control means being operational only when the door means is closed.

4,316,446

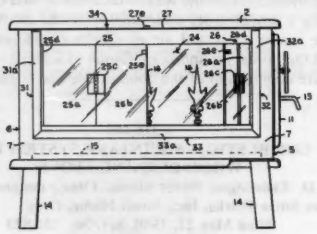
WOODBURNING HEATER WITH PROTECTED VIEWING WINDOW

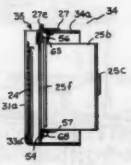
Richard A. Russo, Holbrook, Mass., assignor to Russo Manufacturing Corp., Randolph, Mass.

Division of Ser. No. 936,357, Apr. 18, 1977, abandoned. This application Jun. 25, 1979, Ser. No. 52,121

Int. Cl.³ F23M *7/00*

U.S. Cl. 126—200 **3 Claims**





1. A stove comprising in combination:

a housing enclosing a combustion chamber adapted to burn a solid fuel;

a side opening in said housing for viewing the interior of said combustion chamber;

a frame surrounding said side opening and secured to said housing;

a transparent panel supported by said frame at a fixed position spaced forwardly of said side opening;

a vent opening in said frame between said transparent panel and said side opening;

a vent cover movable on said frame between a closed position blocking said vent opening and an open position providing access therethrough to the space between said transparent panel and said side opening; and

door means mounted on said frame within said space, said door means being accessible solely through said vent opening when said vent cover is open and being adjustable between an open position exposing said transparent panel to the interior of said combustion chamber and a closed position providing a protective heat shield between said transparent panel and the interior of said combustion chamber.

4,316,447

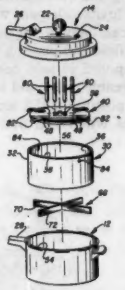
STEAM COOKING APPARATUS

Dave O. Foreman, 606 E. Broadway, Andrews, Tex. 79714

Filed Dec. 3, 1979, Ser. No. 99,842

Int. Cl.³ F24D *1/00;* **A47J** *27/06;* **B65D** *90/04*

U.S. Cl. 126—369 **9 Claims**



1. In a pressure cooker having an upwardly opening cooker body to which there is removably affixed a lid, with seal means between the lid and body to provide a sealed enclosure, and a pressure regulator means by which the pressure within the sealed enclosure is regulated to a value above ambient, the improvement comprising:

an upwardly opening food container of a size to be received within said body, such that an annulus is formed between the body and the container; means supporting the container bottom in spaced relationship respective to the bottom of the body to form a boiler therebetween; a cover plate removably received at the upper end of said container for closing the opening in said container; said cover plate, said container, and said lid jointly form a vapor space above said cover plate;

said cover plate is a relatively thick heating plate which forms a heat sink so that the plate can be preheated to a temperature above 400° F. and subsequently placed into position whereupon the upper surface area of any food contained within the food container is heated;

said cover plate is provided with a plurality of apertures; an elongated heat conducting rod received through each of said apertures, such that one marginal end of said rod is disposed within said vapor space and the other marginal end thereof is disposed within said container;

whereby water can be placed within the boiler, the bottom of the cooker body elevated in temperature to cause the boiler to form steam, whereupon the steam flows up through the annulus, into the vapor space, and is exhausted through the pressure regulator to ambient without condensing onto the heated cover plate.

4,316,448

SOLAR ENERGY CONCENTRATOR SYSTEM

Robert J. Dodge, Houston, Tex., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Oct. 6, 1980, Ser. No. 194,536

Int. Cl.³ F24J *3/02;* **G02B** *7/18*

U.S. Cl. 126—424 **11 Claims**

1. A solar energy concentrator system comprising

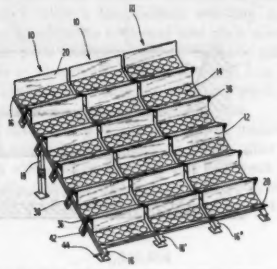
a flexible sheet material reflective of radiation from the sun, said sheet forming a V-shaped concentrator having an apex and a pair of free ends,

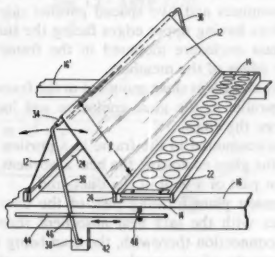
a plurality of support members,

collecting means secured across said support members, each

of said free ends secured to a different one of said collecting means at opposing support points,

an apex-forming member articulating with pivoting means pivotable on said support members at pivot points substantially equidistant from said opposing support points, and





means for pivoting said pivoting means to thereby shift said apex for varying angle that a face of said concentrator makes with the sun, said collecting means collecting sun's radiation reflected from said concentrator.

4,316,449

SOLAR HEATER

Joseph E. Fodor, 712 Shore Dr., Boynton Beach, Fla. 33435

Filed Nov. 6, 1980, Ser. No. 204,457

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—429 **9 Claims**

1. In a solar heater having:

a housing having a bottom and upstanding sides and a top cover which passes solar radiation into the interior of the housing;

and a plurality of inclined solar radiation-absorbing panels of high heat conductivity material in said housing spaced below said top cover, said panels partially overlapping each other in succession between opposite sides of the housing and defining air passages between them where they overlap;

the improvement which comprises:

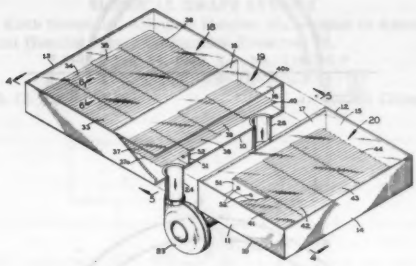
means defining an air inlet leading into the interior of said housing directly below the panel closest to one of said opposite sides of the housing;

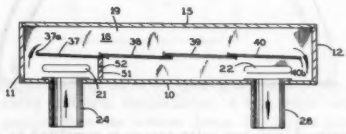
means defining an air outlet leading from the interior of said housing at a location spaced from said air inlet;

an upstanding partition inside said housing below said panels between said air inlet and said air outlet, said partition having openings therein for passing a limited flow of air from said air inlet to said air outlet across the the bottom of the panels on the same side of said partition as the air outlet;

said panel above the air inlet being spaced from the adjacent side of the housing to pass air from said air inlet up into the space between said top cover and said panels to flow across the top of said panels;

the panel closest to the opposite side of the housing spaced from said last-mentioned side to pass air from said space down to said air outlet;





and said air passages between neighboring overlapping panels on the same side of said partition as the air outlet passing air from said space down between the overlapping panels and across the bottom of the panels on said same side of said partition to said air outlet.

4,316,450

PROCESS AND APPARATUS FOR THE UTILIZATION OF SOLAR AND GEOTHERMAL ENERGY IN DOUBLE WALL STRUCTURES

Andras Somos; Istvan Turi; Ferenc Zatyko; Janos Gyuros, and Laszlo Borsody, all of Budapest, Hungary, assignors to Kerteszeti Egyetem, Budapest, Hungary

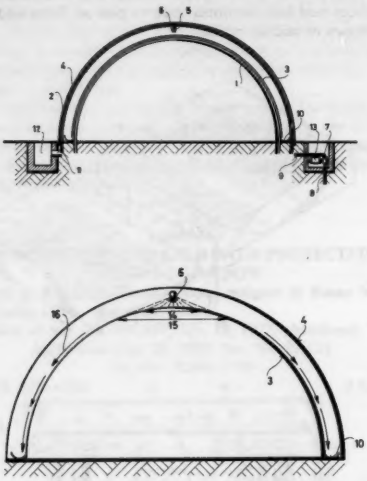
Continuation of Ser. No. 971,937, Dec. 21, 1978, abandoned. This application Sep. 15, 1980, Ser. No. 187,572

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—432 **2 Claims**

2. An apparatus for using geothermal energy as a source of heat and solar energy as an additional source of heat to control the temperature of the area enclosed by a double wall structure standing on the ground, said structure comprising an inner wall and an outer wall defining an air enclosed space, said inner and outer walls each being a solar transparent foil from front to back of the structure, a water spray means attached to the inner top surface of the outer foil wall facing the outer top surface of the inner foil wall to spray water onto the outer top surface of the inner foil wall, a pipe connected to said spray means and a pumping means, which pumping means is adapted to pump naturally occurring water through said pipe to said spray means; a water collecting means at the bottom of said enclosed air space to collect runoff water and means to carry the runoff water to a location remote from the source of the naturally occurring water to enable the runoff water to seep into the

ground; wherein said spray means is directed so the water forms a curtain whereby heat from the water is transferred to



the enclosed area and solar energy is permitted to enter the enclosed area, thus controlling its temperature.

4,316,451

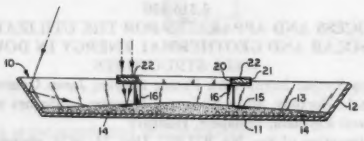
SOLAR ENERGY COLLECTOR

Versal C. Hicks, 501 Delavan Ave., Collinsville, Ill. 62234

Filed Apr. 4, 1980, Ser. No. 137,455

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—440 **4 Claims**



1. A solar energy collector comprising:
(a) a base,
(b) a collar carried by the base and angularly related thereto, the collar having a mirror finish,
(c) an energy absorbing substance for absorbing solar energy carried by the base,
(d) heat exchange conduit means located within the energy absorbing substance,
(e) said conduit means receiving fluid passed through the conduit means for absorbing heat from the energy absorbing substance,
(f) the energy absorbing substance being pine tar,
(g) the pine tar being formed into a generally conical pad,
(h) a metallic ring operatively disposed on top of the pine tar, and
(i) a plurality of lenses located above the metallic ring for focusing solar energy on the metallic ring for heating the pine tar.

4,316,452

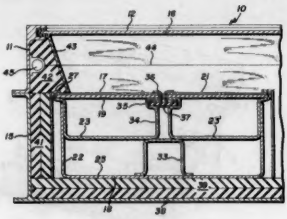
SOLAR COLLECTOR

Philip Levine, Bourne, Mass., assignor to Thomassen U.S., Inc., Bourne, Mass.

Filed Aug. 21, 1980, Ser. No. 179,950

Int. Cl.³ F24J *3/00*

U.S. Cl. 126—450 **22 Claims**



1. Solar collector, comprising;
a box-like rectangular frame adapted to be mounted facing the sun, the frame being formed by two spaced parallel end members and two spaced parallel side members, all members having upper edges facing the sun,
(b) a glass enclosure mounted in the frame adjacent the upper edges of the members,
(c) a heat absorbent sheet mounted in the frame spaced from and parallel to the glass enclosure and located midway between the edges,
(d) a duct mounted in the frame in a portion thereof away from the glass enclosure, the heat absorbent sheet forming at least part of a wall of the duct, and
(e) a tension plate forming part of the duct and lying in contact with the said heat absorbent sheet and held in fixed connection therewith, the duct being in the form of two troughs of rectangular cross-section that are nested together and having upper edges, the bottom wall of one trough being spaced from and parallel to the bottom wall of the other trough, the sheet extending between the upper edges of the said other trough, these edges being bound together with the edges of the sheet in heat conductive relationship, the upper edges of the upper trough being folded over the corresponding upper edges of the other trough and the sheet to provide the said relationship.

4,316,453

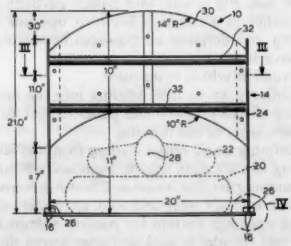
PORTABLE BODY ELECTRODE

William H. Harrison, Woodland Hills, Calif., assignor to Donald L. Morton & Associates, Pacific Palisades, Calif.

Filed Dec. 26, 1979, Ser. No. 106,667

Int. Cl.³ A61N *1/40*

U.S. Cl. 128—1.3 **12 Claims**



1. In an electrode adapted for operative connection to a source of radio frequency energy for use in the treatment of animal tissue by hyperthermia comprising a plurality of electri-

cally interconnected plate members each having at least a pair of plates of electrically conductive material disposed in overlapped relationship with dielectric material disposed between the overlapped portions and wherein the electrically interconnected plate members form a self-resonant single turn loop, the improved electrode comprising:

(a) a pair of side plate members disposed in parallel spaced relationship with a longitudinal working axis therebetween and parallel to both said side plate members;

(b) a power plate member disposed between said side plate members in electrical contact with said side plate members and being on one side of said working axis and normal thereto; and,

(c) a back plate of electrically conductive material disposed between said side plate members on the other side of said working axis and parallel thereto, said back plate being electrically connected to both of said side plate members to thereby complete the self-resonant single turn loop.

4,316,454

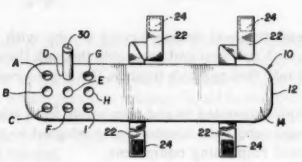
THERAPEUTIC POSITIONING DEVICE

Francis A. Perka, 3314 Arundel Ave., Alexandria, Va. 22306

Filed Aug. 25, 1980, Ser. No. 181,334

Int. Cl.³ A61F *5/10*

U.S. Cl. 128—77 **7 Claims**



1. A therapeutic device used for positioning a limb against pronation or supination as may result from a spastic or a flaccid condition, respectively comprising:

a support board for supporting said limb; and

a limb positioning means extending from said support board for preventing limb pronation in the case of a spastic limb or limb supination in the case of a flaccid limb,

wherein said support board is provided with a plurality of integrally formed adjustment means for varying the physical relationship between the support board and the limb positioning means and wherein said limb positioning means is removably mounted on said support board in any one of said plurality of integrally formed adjustment means.

4,316,455

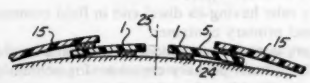
METHOD OF DRAPING A SURGICAL PATIENT

W. Keith Stoneback, Arlington Heights, Ill., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Jan. 25, 1980, Ser. No. 115,471

Int. Cl.³ A61F *13/00*

U.S. Cl. 128—132 D **8 Claims**



1. A method of draping a surgical patient comprising the steps of:

(a) securing a bottom drape to a patient;

(b) placing a top drape having an opening smaller than the bottom drape in superimposed relationship over the bottom drape so that a portion of the bottom drape is exposed through the top drape's opening; and

(c) securing the top drape in fixed relationship to the bottom drape.

4,316,456

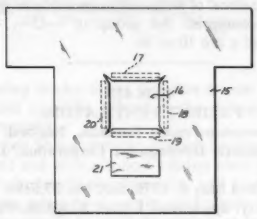
SURGICAL DRAPE SYSTEM

W. Keith Stoneback, Arlington Heights, Ill., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Jan. 25, 1980, Ser. No. 115,585

Int. Cl.³ A61F *13/00*

U.S. Cl. 128—132 D **11 Claims**



1. A surgical drape system comprising a plurality of bottom drapes having different fenestrations; a top drape with an opening smaller than the bottom drape, but larger than the bottom drape's fenestration; and the system includes means to secure the bottom drape to a patient and the top drape in superimposed position on the bottom drape, whereby the top drape can be coupled with one of a plurality of bottom drapes to provide a drape system with the desired fenestrations.

4,316,457

PROCESS FOR PRODUCING ORTHOPEDIC STRUCTURES AND A THERMOPLASTIC LINEAR POLYURETHANE FOR USE IN SUCH PROCESS

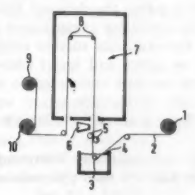
Jean Marie C. G. Liegeois, Charneux-Herve, Belgium, assignor to Hexcel Corporation, San Francisco, Calif.

Continuation of Ser. No. 1,261, Jan. 5, 1979, abandoned. This application Oct. 9, 1980, Ser. No. 195,370

Claims priority, application European Pat. Off., Jun. 19, 1978, 78100201

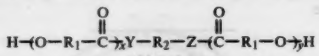
Int. Cl.³ A61L *15/00*

U.S. Cl. 128—156 **10 Claims**



5. A bandage material for forming in place a rigid orthopedic cast, comprising a pliant fabric material comprising low density strands of relatively bulky heat insulating material and defining openings of relatively large diameter; each strand being coated and at least partially impregnated with a solvent solution of a polymer composition comprising a prepolymeric polyurethane having two isocyanate end groups, a chain-extender, and a solvent wherein the solvent is removed under evaporation conditions in the presence of the pliant fabric such that the final thermoplastic linear polyurethane is formed in situ, comprising recurring units of the prepolymeric polyurethane which are linked by radicals of a bifunctional chain-

extender, characterized in that the prepolymeric polyurethane is formed by reacting a diol of the general formula



with a diisocyanate of the general formula OCN—R_3—NCO, wherein R_1 represents an alkylene radical having 4 to 6 carbon atoms, which is unsubstituted or may be substituted with lower alkyl groups, cycloalkyl groups, lower alkoxy groups, the numer of substituents being 1 to 3, the radicals R_1 being identical radicals or mixed radicals, R_2 represents a lower alkylene radical having 2 to 6 carbon atoms, R_3 comprising the group consisting of a radical of an aromatic or aliphatic diisocyanate, and Y and Z comprise the group of —O—, —NH— or —COO—, x and y are 10 to 20.

4,316,458

PATIENT VENTILATORS

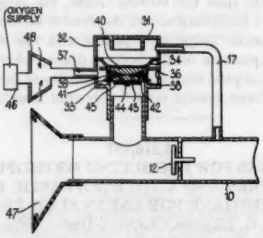
Allan M. Hammerton-Fraser, Farnham, England, assignor to National Research Development Corporation, London, England

Filed May 8, 1979, Ser. No. 37,519

Claims priority, application United Kingdom, May 9, 1978, 18539/78

Int. Cl.³ A61M *16/00*

U.S. Cl. 128—205.24 **7 Claims**



1. A delivery tube array for a patient ventilator usable for delivering a compression stroke and a suction stroke, the delivery tube array comprising:

a gas delivery tube including means adapted in use to couple a patient to the patient ventilator for delivering compression and suction strokes to the patient;

a non-return valve within the delivery tube operable to be open during the ventilator compression stroke and to be closed during the ventilator suction stroke;

a casing having an upper and lower chamber, said lower chamber having an inlet connected to said gas delivery tube downstream of the non-return valve, said lower chamber also having an outlet vent connected to atmosphere;

an air bleed pipe communicating between the upper chamber and the gas delivery tube upstream of the non-return valve;

diaphragm means in said casing for sealing said upper chamber from said lower chamber;

relief valve means in said lower chamber for closing said lower chamber inlet and providing one way flow from said gas delivery tube to said vent;

biasing means operatively associated between said diaphragm means and said relief valve means for holding said relief valve means closed during a suction stroke, said diaphragm means responsive to pressure in said upper chamber during a compression stroke for holding said relief valve means closed during said compression stroke;

an inlet valve means through said relief valve means for providing one way flow from said lower chamber to said gas delivery tube whereby in use the relief valve means opens when the pressure within the patient's lungs is greater than the gas pressure upstream of the non-return valve, and closes when the gas pressure upstream of the non-return valve is equal to or greater than the gas pressure within the patient's lungs, and the inlet valve means is operable to allow gas to enter the delivery tube when the patient attempts to inhale during a suction stroke.

4,316,459

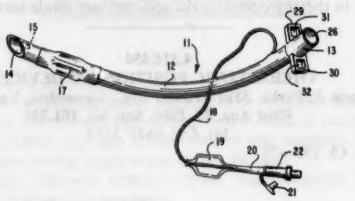
ENDOTRACHEAL TUBE NOT REQUIRING ADHESIVE TAPE

Donald J. Walski, 5733 North Kenmore, Chicago, Ill. 60660

Filed Aug. 9, 1979, Ser. No. 65,128

Int. Cl.³ A61M *16/00*

U.S. Cl. 128—207.17 **6 Claims**



1. In an endotracheal device having a tube with first and second ends with said first end insertable through the mouth of a person and into that person's trachea, the improvement comprising:

(A) an adaptor, coupled to and removable from said second end of said tube, said adaptor being adapted to couple to mechanical respirating equipment;

(B) a narrow elongated web of substantially nonadhesive material of sufficient length to extend around said tube and around the head of said person; and

(C) holding means, attached to said adaptor, for maintaining said web, when around said tube and around the head of said person, in proximity to said adaptor.

4,316,460

GRAVITATIONAL FLOW SYSTEM FOR THE SEQUENTIAL ADMINISTRATION OF MEDICAL LIQUIDS

Joseph N. Genese, Waukegan, and Andrew J. Muetterties, Gages Lake, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 16,227, Feb. 28, 1979, abandoned, and Ser. No. 16,228, Feb. 28, 1979, Pat. No. 4,223,695, and Ser. No. 16,230, Feb. 28, 1979, Pat. No. 4,250,879, and Ser. No. 16,232, Feb. 28, 1979, Pat. No. 4,219,022, and Ser. No. 16,461, Feb. 28, 1979, Pat. No. 4,256,104. This application Jul. 14, 1980, Ser. No. 167,948

Int. Cl.³ A61M *5/00*

U.S. Cl. 128—214 R **22 Claims**

1. A gravitational flow system for the sequential administration of medical liquids to a patient comprising:

a primary container suspended in space for containing a primary medical liquid,

a primary tube having its distal end in fluid communication with said primary container,

a secondary container suspended in space at a height greater than that of said primary container for containing a secondary medical liquid,

a secondary tube having its distal end in fluid communication with said secondary container,

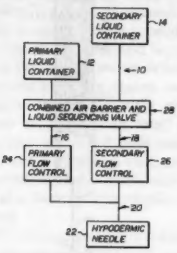
a common tube having its distal end in fluid communication with the proximal ends of said primary and secondary tubes and its proximal end open for the flow of liquid therethrough to form a primary liquid path comprising

said primary tube and said common tube and a secondary liquid flow path comprising said secondary tube and said common tube,

secondary flow control means in said secondary liquid flow path for adjusting the flow rate of said secondary liquid therethrough,

primary flow control means on said primary tube for adjusting the flow of said primary liquid through said primary liquid flow path at a rate independent of the flow rate of said secondary liquid through said secondary liquid flow path, and

a combined air barrier and liquid sequencing valve interposed in said primary and secondary flow paths which



allows primary liquid to flow from said primary container whenever the height of said primary liquid is less than or equal to the height of said secondary liquid in said system and which prevents primary liquid from flowing from said primary container whenever the height of said primary liquid is less than the height of said secondary liquid in said system,

said combined air barrier and liquid sequencing valve comprising a housing having an air capturing pocket disposed in the primary liquid flow path through said valve, said air capturing pocket being constructed and arranged for the entrapment of a quantity of air therein during dispensing of secondary liquid whereby the flow of primary liquid is halted.

4,316,461

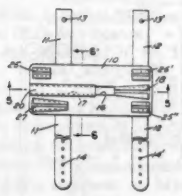
INTRAVENOUS VASCULAR STABILIZER

Henri J. Marais, 218 South St., Waltham, Mass. 02154, and Kevin M. Morrison, 320 Lynnfield St., Lynn, Mass. 01904

Continuation-in-part of Ser. No. 770,684, Feb. 22, 1977, abandoned. This application Feb. 22, 1980, Ser. No. 123,893

Int. Cl.³ A61M 5/00

U.S. Cl. 128—214 R **7 Claims**



7. An intravenous vascular stabilizer comprising a substantially rigid rectangular base plate having a substantially medial longitudinal aperture defined by edges that closely embrace a vascular strand with an open bracket substantially rigid inverted U-shape bubble hood means overlying substantially the entire length of said aperture, the sides of said hood means connected to the edges of said aperture along a major length thereof to rigify the edges of the longitudinal aperture whereby the bubble hood will cover a substantial portion of the longitudinal aperture and the edges of the longitudinal aperture will engage the raised vein when pressed from above.

4,316,462

FILTERING DEVICE FOR AN INJECTION DEVICE

John W. Baker, Flemington, N.J., assignor to Siloam, Inc., Three Bridges, N.J.

Filed May 21, 1980, Ser. No. 151,808

Int. Cl.³ A61M 5/00

U.S. Cl. 128—218 N **47 Claims**

1. A filtering device for an injection device which includes a syringe and a needle affixed to the syringe, said filtering device comprising:

an elongated hollow tubular element having a first end and a second end with a hollow tubular body portion extending longitudinally therebetween, said first end including mounting means for mounting said tubular element on said injection device to sealingly enclose at least a portion of said needle within said tubular body portion, said second end being open for the introduction of fluids therethrough into the hollow interior of said tubular body portion, and the longitudinal length of said tubular body portion being such that said second end is spaced from the end of said needle remote from said syringe when said tubular element is mounted on said injection device;

filtering means for filtering fluids drawn through said second end of said tubular element, said filtering means including a central filtering portion corresponding in size to the size of said opening at said second end of said tubular element and an outer peripheral portion surrounding said central filtering portion;

sleeve securing means for securing said filtering means to said tubular element at said second end, said sleeve securing means being mounted on said tubular element at said second end, and said sleeve securing means and said tubular element including respective mating portions for securing said peripheral portion of said filtering means between said sleeve securing means and said tubular element so that only filtered fluid will be drawn into said tubular body portion through said opening at said second end of said tubular element; and

said mounting means mounting said tubular element on said injection device so as to be removable therefrom to expose said needle after filtered fluid has been introduced into said syringe.

4,316,463

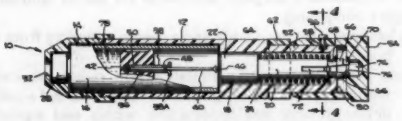
CORROSIVE PROTECTED HYPODERMIC MODULE

William L. Schmitz, Hemet, and John B. Schmitz, Arcadia, both of Calif., assignors to Vac-O-Cast, Inc., Hemet, Calif.

Filed Jan. 26, 1981, Ser. No. 228,628

Int. Cl.³ A61M 5/20

U.S. Cl. 128—218 F **18 Claims**



1. A corrosive protected hypodermic module comprising:

a cylindrical barrel open at its forward end,

a pierceable seal across said forward end of said barrel,

a piston in said barrel in slidable sealed relation to the interior wall of the barrel,

said barrel, between said pierceable seal and said piston defining a medicament chamber,

said piston having a longitudinal bore therein,

a pierceable diaphragm across the forward end of said bore, sealing the bore from said medicament chamber,

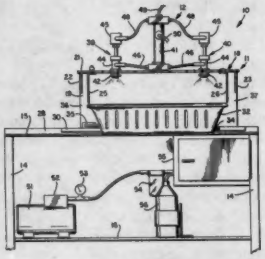
and a tissue piercing needle supported in said bore behind the pierceable diaphragm and longitudinally slidable in said bore.

4,316,464

POULTRY VACCINATION SYSTEM

Walter L. Peterson, Gainesville, Ga., assignor to Select Laboratories, Inc., Gainesville, Ga.

Filed Mar. 9, 1981, Ser. No. 241,495
Int. Cl.³ A61M *11/00*
U.S. Cl. 128—253 **7 Claims**



1. A method of vaccinating poultry comprising placing a multiple number of chicks in an open top container in a crowded condition in which the chicks are in physical contact with one another, moving the container along a horizontal path until the container is located beneath at least one spray nozzle, and in response to the container moving toward its position beneath the spray nozzle ejecting a vaccine spray from the nozzle downwardly onto the upper portions of and into the eyes of the chicks in a droplet size large enough to fall onto the chicks substantially without remaining airborne long enough to be inhaled by the chicks, removing the container from beneath the spray nozzle, and retaining the chicks in the container for a period sufficient for the normal movement of the chicks with respect to one another to cause some of the droplets of vaccine on the bodies of some of the chicks to make contact with the bodies of adjacent chicks.

4,316,465

OPHTHALMIC HANDPIECE WITH PNEUMATICALLY OPERATED CUTTER

Robert S. Dotson, Jr., 421 Warner Park Rd., Manhattan, Kans. 66442

Continuation-in-part of Ser. No. 25,537, Mar. 30, 1979, Pat. No. 4,274,411. This application Nov. 29, 1979, Ser. No. 98,491
Int. Cl.³ A61M *1/00*
U.S. Cl. 128—276 **5 Claims**

1. A pneumatic surgical instrument for use in ophthalmic surgery comprising;

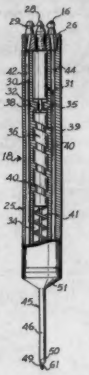
a handpiece having a body and a needle extending from said body,

said needle including an aspiration port in communication with an aspiration passage coaxial therewith, and a cutting device, rotable and reciprocable within said aspiration passage, said cutting device being movable across said aspiration port for severing tissue extending therethrough,

said needle further including an irrigation needle coaxial therewith and terminating short of said aspiration port, said body defining a first bore therein and a second bore coaxial with said first bore,

a driving device within said first bore and reciprocable therein, said driving device having said cutting device fixed thereto for movement therewith,

fluid operated means for causing said driving device to move in a first direction, said fluid operated means comprising a pneumatic cylinder having a rod projecting therefrom



toward the driving device, said rod being arranged to engage said driving device on projection from said pneumatic cylinder,

resilient means to cause said driving device to move in the opposite direction, and

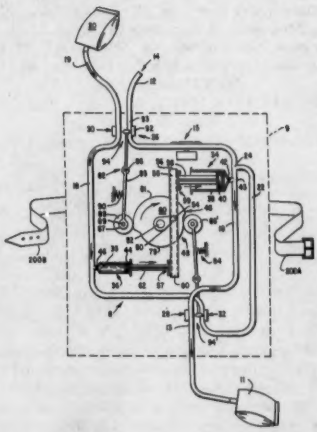
helical means on said driving device for causing rotation of said driving device about its axis as said driving device moves in said first bore.

4,316,466

BODY FLUID DRAINAGE DEVICE

Albert L. Babb, Seattle, Wash., assignor to Biomedics, Inc., Arlington Heights, Ill.

Filed Jun. 27, 1980, Ser. No. 163,888
Int. Cl.³ A61M *1/00*
U.S. Cl. 128—278 **25 Claims**



1. Apparatus suitable for withdrawing a body fluid from a duct in a patient comprising:

(a) a frame;

(b) first reciprocating pumping means, mounted on said frame, for pumping body fluid, said first pumping means including a body fluid reservoir and a first piston plugging said fluid reservoir at one end, said fluid reservoir having an opening at the opposite end defining the inlet and outlet of said first pumping means, said first piston being free to move reciprocatingly within said fluid reservoir between an "in" and an "out" position, thereby defining the suction and discharge strokes of said first pumping means;

(c) a body fluid passageway associated with said frame and having an inlet end and an outlet end, said body fluid passageway being in communication with said opening in said body fluid reservoir at a location intermediate the inlet and outlet ends of said body fluid passageway;

(d) second reciprocating pumping means, mounted on said frame, for pumping liquid, said second pumping means including a liquid reservoir and a second piston plugging said liquid reservior at one end, said liquid reservoir having an opening at the opposite end defining the inlet and outlet of said second pumping means, said second piston being free to move reciprocatingly within said liquid reservoir between an "in" and an "out" position;

(e) a liquid passageway associated with said frame and having an intake end and a discharge end, said liquid passageway being in communication with said opening in said liquid reservoir at a location intermediate said intake end and discharge end;

(f) first and second valving means, situated respectively at said body fluid passageway inlet end and outlet end and means operatively connecting said first and second valve means with said first pumping means, for controlling fluid flow therethrough, said first and second valving means each having open and shut positions;

(g) third and fourth valving means, situated respectively, at said liquid passageway intake end and discharge end and means operatively connecting said first and second valve means with said second pumping means, for controlling liquid flow therethrough, said third and fourth valving means each having open and shut positions; and

(h) motor means, mounted on said frame, for operating said first and second pumping means to induce flow through said body fluid passageway and through said liquid passageway,

the discharge end of said liquid passageway communicating with said body fluid passageway at a location upstream of the inlet to said first pumping means whereby liquid flowing out of said liquid passageway is commingled with the body fluid in said body fluid passageway as an aliquot of the body fluid is drawn into said body fluid reservoir by the reciprocating action of said first pumping means.

4,316,467

CONTROL FOR LASER HEMANGIOMA TREATMENT SYSTEM

Myron C. Muckerheide, Schofield, Wis., assignor to Lorenzo P. Maun, Belleville, Ill., a part interest

Filed Jun. 23, 1980, Ser. No. 161,837

Int. Cl.³ A61B *17/36*

U.S. Cl. 128—303.1 **2 Claims**

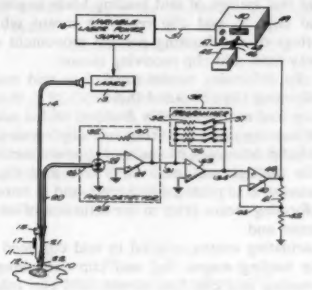
1. In a system for laser beam treatment of lesions on the body which lesions have color variations and correspondingly different coherent radiation reflection and absorption characteristics, said system comprising a laser, a power supply coupled to the laser for energizing the laser, an adjustable control for varying the output power level of the power supply and the radiation output power of the laser, a first fiber optic bundle optically coupled to the laser for conducting radiation from the laser and for directing a radiation beam onto the lesion,

the improvement for automatically increasing and decreasing the radiation output power of the laser correspondingly with increasing and decreasing reflection of radiation from the lesion, comprising:

a second fiber optic bundle having radiation input and output ends, the input end adapted to be located for receiving radiation reflected from the region on which the laser beam is directed by said first fiber optic bundle within or outside of the boundaries of the lesion,

photodetector means optically coupled to said output end of said second fiber optic bundle, said photodetector means being operative to produce an electric signal varying in correspondence with the intensity of the reflected radiation emitted from the output end of said second fiber optic bundle,

said adjustable control for said power supply comprising a potentiometer having a shaft rotatable in opposite directions for respectively increasing and decreasing the power output from the power supply and said laser correspondingly,



a galvanometer having electric signal input means and having a driven shaft, a circuit coupling said signal produced by the photodetector means to the galvanometer input means, said galvanometer responding to signals corresponding to increasing and decreasing reflection from said lesion by turning its shaft in respectively opposite directions, and

means for coupling the galvanometer shaft to the potentiometer shaft such that when said galvanometer shaft turns in a direction corresponding to detection of increasing reflected radiation said potentiometer shaft turns in a direction corresponding with increasing the power output of said laser and when said galvanometer shaft turns in a direction corresponding to detection of decreasing reflected radiation said potentiometer shaft turns in a direction corresponding to decreasing the laser power output.

4,316,468

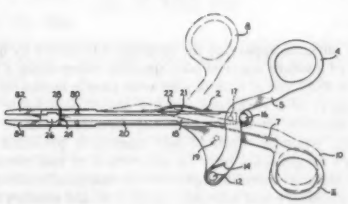
SURGICAL STAPLER

Charles H. Klieman, 3737 Century Blvd., Lynwood, Calif. 90262, and Richard M. Densmore, South Gate, Calif., assignors to Charles H. Kljeman, Lynwood, Calif.

Continuation of Ser. No. 822,096, Aug. 5, 1977, abandoned. This application Aug. 29, 1980, Ser. No. 182,641

Int. Cl.³ A61B *17/12*; B31B *1/00*

U.S. Cl. 128—325 **14 Claims**



1. A surgical clip applying device comprising:

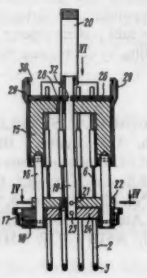
(i) a main body having means for receiving clips;
(ii) a clip magazine coupled to the exterior of said main body and having a housing adapted to store a plurality of said clips in a parallel relationship with said main body, said housing including a plurality of inwardly biased leaf springs;
(iii) clip loading means slideably disposed within said housing for moving said clips from said magazine to said clip receiving means, said clip loading means comprising a blade member having a plurality of leaf springs disposed thereon so as to be in substantially opposed relationship with said leaf springs of said housing, said leaf springs of said housing and said leaf springs of said loading blade having a "V"-shaped leading edge so as to engage the correspondingly shaped portions of said clips, whereby said leaf springs of said loading blade sequentially move said clips to said clip receiving means while said leaf springs of said housing prevent movement of said clips away from said clip receiving means;
(iv) clip deforming means coupled to said main body for deforming clips disposed therein;
(v) clip feed means slideably disposed within said main body for moving said clips from said clip receiving means to said clip deforming means, said clip feed means adapted to slide through said main body into said clip deforming means so as to place a clip therein, and to retract from said deforming means prior to the actuation of said deforming means; and
(vi) actuating means coupled to said clip feed means, said clip loading means and said clip deforming means for actuating said clip feed means, said clip loading means, and said clip deforming means.

4,316,469

SURGICAL APPARATUS FOR SUTURING SOFT TISSUES WITH LENGTHS OF SUTURING MATERIAL WITH SPICULES

Nikolai N. Kapitanov, ulitsa Levchenko, 3, kv. 9, Moscow, U.S.S.R.

Continuation of Ser. No. 831,259, Sep. 7, 1977, abandoned. This application Oct. 5, 1979, Ser. No. 82,634
Claims priority, application U.S.S.R., Sep. 7, 1976, 2403384
Int. Cl.³ A61B *17/04*
U.S. Cl. 128—334 R **8 Claims**



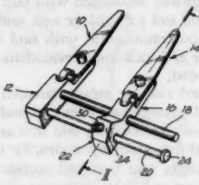
1. A surgical apparatus for suturing soft tissues by means of pieces of a suture material with spicules, comprising: a housing being in the form of hollow rods with handle means for receiving fingers of a surgeon's hand; a set of detachable needles being movable in the longitudinal direction relative to said housing, whereby, each of said needles is provided with a through longitudinal bore for placement of said piece of the suture material therethrough and into said needle; drive means being stationary and movable relative to said needles and said housing, respectively; a stop member being mounted within said housing being stationary relative to said housing in the form of stems having a variable cross-section whereby the free ends of said stems being placed within said needles in a stopped position with said pieces of the suture material and an actuator means for imparting longitudinal movement to said needles, said actuator being defined by a slide member having holes therein whereby, said needles have their rear ends secured in the holes of the slide; said actuator being further defined by a rod, one end of which is fastened to the slide; and said handle means disposed on the other end of said rod.

4,316,470

APPROXIMATOR FOR ANASTOMOTIC SURGERY

Karl Braun, Talheim, and Erich Wintermantel, Tübingen, both of Fed. Rep. of Germany, assignors to Aesculap-Werke Aktiengesellschaft, vormals Jetter & Scheerer, Tuttlingen, Fed. Rep. of Germany

Filed Dec. 10, 1979, Ser. No. 101,679
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1978, 2856386
Int. Cl.³ A61B *17/00, 17/04, 17/08*
U.S. Cl. 128—346 **13 Claims**



1. An approximator, comprising
two spaced guide bars substantially parallel to each other defining a space therebetween,
a first clamp holder connected rigidly to a first end of said two guide bars,
a second clamp holder displaceably guided on said two guide bars,
two clamps, having jaws respectively movable relative each other, mounted on said first and second clamp holders, respectively, one of said clamps mounted in said second clamp holder defining a plane of displacement by displacement of the latter,
one of said two guide bars constitutes a meshing bar non-rotatably connected to said first clamp holder constituting the first-mentioned rigid connection of the first clamp holder to said first end, and
at least one driver being mounted on said second clamp holder rotatably about an axis crossing the longitudinal axis of said meshing bar and penetrating said plane of displacement of said one clamp, said driver is formed with a toothed gear operatively engaging with said meshing bar, the latter and said toothed gear forming a rack and pinion gearing.

4,316,471

ORGAN STIMULATING APPARATUS WITH SEALING SETSCREW

Frederick J. Shipko, Spring Church, and Robert D. Norman, Indiana, both of Pa., assignors to Coratomic, Inc., Indiana, Pa.

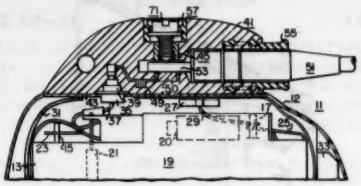
Filed May 19, 1980, Ser. No. 151,379
Int. Cl.³ A61N *1/00*
U.S. Cl. 128—419 P **17 Claims**

1. Organ-stimulating electrical apparatus to be implanted in a body including a catheter for connecting said apparatus to an organ of said body, the said catheter to extend into said apparatus and to be electrically connected thereto, said apparatus also including a threaded receptacle extending into said apparatus generally laterally of said catheter, a resilient member extending into said apparatus coextensive with said receptacle and a

setscrew for securing said catheter in said apparatus, the said setscrew including:

(a) a threaded member for screwing into the thread of said receptacle and engaging and securing said catheter; and

(b) a head secured to said threaded member, the maximum transverse dimension of said head being greater than the transverse dimension of at least the portion of said resilient



member which is engaged by said head, throughout the peripheries of said head and portion, when said threaded member is screwed into said receptacle into securing engagement with said catheter, so that when said threaded member is so screwed into said receptacle, the engagement of said resilient member by said head seals the region of said apparatus extending inwardly of said head against the penetration of body fluids.

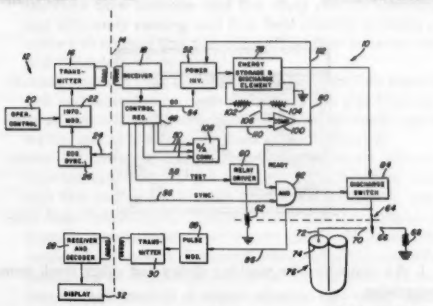
4,316,472
CARDIOVERTING DEVICE WITH STORED ENERGY SELECTING MEANS AND DISCHARGE INITIATING MEANS, AND RELATED METHOD

Mieczyslaw Mirowski, Rte. 3, Velvet Valley Way, Owings Mills, Md. 21117; Morton M. Mower, Baltimore, Md., and Alois A. Langer, Pittsburgh, Pa., assignors to Mieczyslaw Mirowski, Owings Mills, Md.

Continuation of Ser. No. 641,381, Dec. 17, 1975, abandoned, which is a continuation of Ser. No. 464,180, Apr. 25, 1974, Pat. No. 3,952,750. This application Aug. 9, 1979, Ser. No. 65,228

Int. Cl.³ A61N *1/36*

U.S. Cl. 128—419 D **18 Claims**



1. In a cardioverting device, comprising:

storage means for storing energy to convert an abnormal cardiac rhythm to normal sinus rhythm,

delivery electrode means for discharging the stored energy into the heart of a wearer of the device, and

switch means for controlling the discharge of the stored energy into the heart of the wearer;

said device further comprising:

charging means for delivering to said storage means said energy to convert said abnormal cardiac rhythm,

determining means for determining when the stored energy has reached a predetermined magnitude for converting said abnormal cardiac rhythm, and

initiating means for initiating the discharge of converting energy into the heart of the wearer after the stored energy has reached said predetermined magnitude;

the improvement wherein said device is an implantable externally programmable cardioverting device, and includes receiving means for receiving commands from external to the skin of the wearer of the device, said programming commands designating a predetermined magnitude of stored energy for converting said abnormal cardiac rhythm, said device also including selecting means responsive to said programming commands received by said receiving means for selecting said predetermined magnitude, from among a plurality of selectable magnitudes, of stored energy, for converting said abnormal cardiac rhythm.

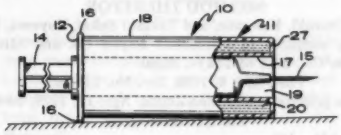
4,316,473
PORTABLE BLOOD SAMPLE TEMPERATURE CONTROL SYSTEM

Gerald S. Beskin, Minneapolis, Minn., assignor to Therapac Division, Krelitz Industries, Inc., Minneapolis, Minn.

Filed Apr. 18, 1980, Ser. No. 141,423

Int. Cl.³ A61B *5/14*

U.S. Cl. 128—763 **9 Claims**



1. A portable temperature control system which comprises:

a syringe containing a blood sample,

first wall means defining a chamber having access means for accepting said blood sample containing syringe, said chamber being at least coextensive with said contained blood sample;

second wall means cooperating with said first wall means for defining reservoir means surrounding said chamber;

heat sink means within said reservoir means for uniformly withdrawing heat from said chamber; and

support means extending from said second wall means for selectively orienting said chamber.

4,316,474
HIGH FREQUENCY RADIATION THERAPY APPARATUS

Jens Spethmann, Lüneburg, Fed. Rep. of Germany, assignor to Firma Electric Electronic Service Jens Spethmann, Lüneburg, Fed. Rep. of Germany

Filed May 8, 1980, Ser. No. 148,175

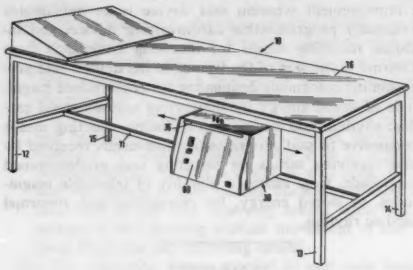
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1979, 7923476[U]

Int. Cl.³ A61B *5/00*

U.S. Cl. 128—804 **9 Claims**

1. High frequency radiation therapy apparatus comprising: a couch defining a generally horizontal surface upon which a patient may lie in the prone position; a slide assembly slidably mounted on said couch immediately beneath said surface so as to be movable in the longitudinal direction thereof; high frequency generator means mounted in said slide assembly and movable therewith relative to said couch surface; wave guide means mounted as part of said slide assembly through which high frequency radiation from said generator means is delivered from beneath said surface to a patient lying thereon; said wave guide means comprising a hollow wave guide housing extending lengthwise laterally beneath said surface and having

a length at least approximatey equivalent to the width of said surface, a plurality of slotted openings formed in the top of said wave guide housing facing upwardly toward the underside of said horizontal surface, said slotted openings being arranged in



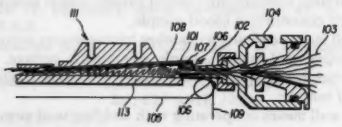
a plurality of groups and distributed across the width of said surface and means for selectively closing the slotted openings of each group independently of the openings of another group to block passage of radiation therethrough.

4,316,475

TOBACCO SMOKE FILTER PLUG AND PRODUCING METHOD THEREFOR

Migaku Suzuki, Kawanoe, and Takashi Sakai, Toyoma, both of Japan, assignors to Mitsubishi Rayon Co. and Mitsubishi Adetate Co., both of Tokyo, Japan

Filed Apr. 4, 1980, Ser. No. 137,267
Claims priority, application Japan, Apr. 12, 1979, 54-44647
Int. Cl.³ A24C *5/50*
U.S. Cl. 131—340 **8 Claims**



1. A tobacco smoke filter plug comprising fiber tow fillings in the form of cylinder, composed of an inner core phase A and an outer skin layer B different from each other in fibrous arrangement structure thereof, said inner core phase A being consisting of fillings in a folded arrangement structure having a folding axis forming an angle of α with respect to the central longitudinal axis of the filter plug in cross section, and said outer skin layer B being consisting of fillings in a folded structure substantially parallel to the central longitudinal axis of the filter plug in cross section and surrounding said inner core phase.

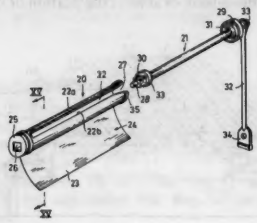
4,316,476

FLAT CURLER TO CURL OR UNDULATE HAIR

Marco Merges, Cologne, Fed. Rep. of Germany, assignor to Heinz Merges, Cologne, Fed. Rep. of Germany

Filed Mar. 24, 1980, Ser. No. 133,311
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1979, 7910247[U]; Sep. 25, 1979, 2938701
Int. Cl.² A45D *2/00*
U.S. Cl. 132—40 **15 Claims**

1. A hair curler comprising an elongated bar having a medial portion and opposite end portions, said elongated bar medial portion being adapted to have first wound thereon first portions of strands of hair disposed remote from a persons scalp, a band having axially opposite end portions, a tubular sleeve defined by a tubular wall into which is telescopically slideably received through an open end portion thereof at least one of said elongated bar opposite end portions, a longitudinal slot in said tubular sleeve wall opening axially through said tubular sleeve wall open end portion whereby unwound second portions of said strands of hair can be slid axially into said longitudinal slot through said axial opening thereof and thereafter said



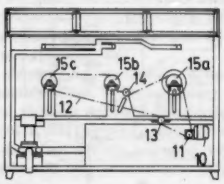
second strand portion can be wound about said tubular sleeve, said band including means for cooperatively interconnecting said elongated bar and said tubular sleeve, and flexible flap means carried by said tubular sleeve for circumferentially overlapping said longitudinal slot in its entirety and for having wound thereupon said second strand portion.

4,316,477

WASHING MACHINE FOR DISHES

Hu-Kuo Song, 24, Alley 3, Lane 100, Ta Ya Rd., Taichung City, Taiwan

Filed Aug. 8, 1980, Ser. No. 176,505
Int. Cl.³ B08B *3/02*
U.S. Cl. 134—96 **10 Claims**



1. An apparatus for washing dishes and other small items comprising:

a casing body;

a washing compartment provided in said casing body;

driving means mounted within said casing body;

replaceable means rotatably supported in said washing compartment for receiving articles to be washed;

transmission means engaged with said driving means for rotating said replaceable means;

means for storing water and rinsing liquid;

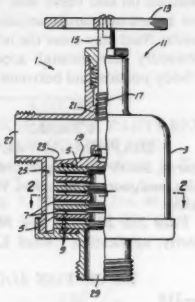
turnable injection pipes mounted on the upper portion of said washing compartment and connected with said storing means; and

means for pressuring the water or the rinsing liquid stored in said storing means to be injected out of said injection pipes onto the articles placed in said replaceable means.

4,316,478
FLUID CONTROL VALVE

Calvin A. Gongwer, Glendora, Calif., assignor to Innerspace Corporation, Glendora, Calif.

Division of Ser. No. 943,574, Sep. 18, 1978, Pat. No. 4,205,696.
This application May 27, 1980, Ser. No. 153,419
The portion of the term of this patent subsequent to Jun. 3, 1997, has been disclaimed.
Int. Cl.³ F16K *47/04*
U.S. Cl. 137—14 **3 Claims**



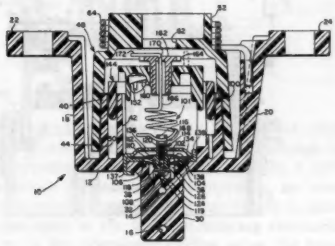
1. A fluid control valve comprising:
a housing;
a plurality of first annular fluid control elements stacked within said housing;
a plurality of second annular fluid control elements stacked within the center space within said first annular fluid control elements, alternate second fluid control elements being provided with a taper of greater than 0° and less than about 3° adjacent the center space within said first annular fluid control elements;
retainer means for spacing said first stacked fluid control elements from the interior surface of said housing;
axial force exerting means for causing said first control elements to move toward each other thereby restricting the fluid flow between said first fluid control elements, and ultimately causing said first fluid control elements to come into contact thus preventing fluid flow between said first fluid control elements;
conduit means in flow communication between said stacked first and second flow control elements and said housing;
conduit means in flow communication with the center space within said second annular fluid control elements;
means for preventing fluid flow communication directly between said housing and said center space within both said first and second annular fluid control elements; and
said first fluid control elements being further defined as forming seats adapted to receive a resilient means and said second fluid control elements further including means for producing an interference fit about the periphery of said second fluid control elements adjacent said center space within said first annular fluid control elements.

4,316,479
VACUUM MODULATOR VALVE AND SUBASSEMBLY THEREFOR

Rudolph J. Franz, Schaumburg; Dennis DeVera, Mundelein, both of Ill., and James A. Dahlstrom, Versailles, Ohio, assignors to Eaton Corporation, Cleveland, Ohio

Filed Oct. 29, 1979, Ser. No. 88,806
Int. Cl.³ G05D *16/00*
U.S. Cl. 137—85 **13 Claims**

1. A vacuum modulator valve assembly, comprising:
(a) housing means, said housing means including means defining,
(i) an inlet port adapted for connection to a vacuum source,
(ii) an outlet port;
(b) modulator vavle means operably connected to said housing means, said modulator means defining in cooperation with said housing means a fluid chamber in fluid communication with said inlet port and said outlet port, said modulator valve means including means defining
(i) force balance valve means having portions disposed within said fluid chamber, said force balance valve means including structure movable to control the fluid pressure within said chamber;
(c) means for preloading said force balance valve means, said preload means including



(i) rotary input means for receiving a rotational input, said input means including a cup member received over said housing means and an annular drive member slidably received in said housing means, said drive member being operatively connected to said cup for rotation therewith,
(ii) axially movable means operatively contacting said drive member movable relative to said housing means in response to rotation of said rotary input means, said axially movable means being operative to vary the preload on said force-balance valve means, wherein said fluid pressure in said chamber acting on said force-balance valve means is operative to balance a preload externally applied thereto such that a modulated vacuum output signal representative of said preload is produced at said outlet port.

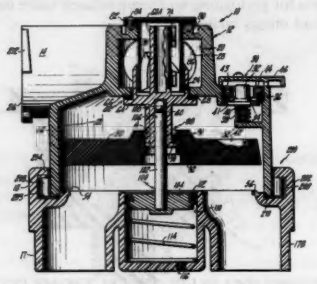
4,316,480
SEQUENCING VALVE

Carl L. C. Kah, Jr., 778 Lakeside Dr., North Palm Beach, Fla. 33408

Filed Oct. 30, 1978, Ser. No. 955,950
The portion of the term of this patent subsequent to Nov. 14, 1995, has been disclaimed.
Int. Cl.³ F16K *21/00*
U.S. Cl. 137—119 **14 Claims**

1. A sequencing valve comprising a housing, said housing including an inlet port and an outlet section having a plurality of outlet ports, said housing having a first chamber connected to said outlet ports, said housing further defining an internal flow passage whereby fluid communication may be established between said inlet port and said first chamber, said internal flow passage having a cylindrical opening entering into said first chamber, a valving member located in said first chamber having at least one opening therethrough, said valving member being movable between a seated and unseated position, in the seated position one or more valving member openings each registers with one of said housing outlet ports while the remainder of the valving member blocks flow through the remaining outlet ports, in the unseated position the valving member is spaced from said outlet ports, valve means located in said housing for cooperation with said cylindrical opening in said internal flow passage, said valve means being movable between a position where it coacts with said internal flow pas-

sage to prevent flow therethrough to a position allowing flow from said cylindrical opening of said internal passage into said first chamber, stem means connecting said valve means to said valving member, biasing means for biasing said valve means into a position coacting with said opening in said internal passage to prevent flow therethrough until sufficient force has been generated on said valve means to overcome said biasing means and for biasing said valving member into its unseated position, said housing having a circular sealing surface for said valve means to sealably bear against when fully biased by said biasing means to prevent flow through said internal flow pas-



sage, said valve means being movable to its position in said first chamber allowing flow in response to a sufficient force generated on said valve means, said movement of said valve means permitting said valving member to move to its seated position, cam means operatively connected to said housing and said stem means to cause said valving member to be rotatably indexed in response to movement of said valve means in one direction by a sufficient force and in the other direction by said biasing means so that said valving member opening or openings can be sequentially aligned with each of said outlet ports, said biasing means including means for controlling the force exerted by said biasing means.

4,316,481

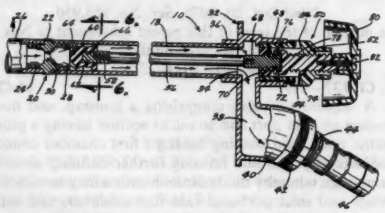
WALL HYDRANT

Russell L. Fillman, Colorado Springs, Colo., assignor to Woodford Manufacturing Company, Colorado Springs, Colo.

Filed Apr. 11, 1980, Ser. No. 138,581

Int. Cl.³ F16K *1/04, 11/04*

U.S. Cl. 137—302 **4 Claims**



1. A wall hydrant, comprising,

a hollow cylindrical tube having an inlet end and an outlet end,

a valve seat connector having an outwardly facing valve seat therein and opposite inner and outer ends,

means for connecting said inner end of said valve seat connector to a source of fluid under pressure,

means for connecting said outer end of said valve seat connector to the inlet end of said hollow tube,

a valve means in said tube adjacent said inlet end, said valve means comprising a cylindrical body portion having inward and outward ends, with the inward end terminating in an arcuate nose portion, and a plurality of spaced apart integral tab elements extending outwardly from said body portion at the outward end thereof, said tab portions slidably engaging the interior surface of said hollow tube,

said valve seat being complementary in shape to the arcuate nose portion of said valve means,

and valve control means extending through said tube and being connected to said valve means to selectively longitudinally slide said valve means inwardly on said tabs to a closed position on said valve seat, and to selectively slide said valve means outwardly on said tabs to an open position whereby fluid may enter the inlet end of said tube and flow outwardly therethrough around said nose portion and said body portion and between said spaced apart tabs.

4,316,482

DIAPHRAGM VALVES

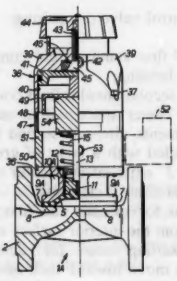
Michael I. Pearce, South Glamorgan, and Glyn Cocking, Gwent, both of Wales, assignors to Saunders Valve Company Limited, Gwent, Wales

Filed Jul. 20, 1979, Ser. No. 59,171

Claims priority, application United Kingdom, Jul. 25, 1978, 30953/78

Int. Cl.³ F16K *43/00*

U.S. Cl. 137—315 **11 Claims**



1. A diaphragm valve comprising first and second self-contained sub-assemblies:

(a) the first sub-assembly comprising:

(1) a valve body defining a flow passage and a diaphragm opening:

(2) a diaphragm closing the diaphragm opening and movable between a closed position in which the diaphragm is in engagement with a seat formed in the flow passage to close the flow passage to fluid flow and an open position in which the diaphragm is spaced from the seat and the passage is open to fluid flow;

(3) a diaphragm clamping member;

(4) means securing the diaphragm clamping member to the valve body for clamping the periphery of the diaphragm in fluid-tight contact with the surface of the body surrounding the diaphragm opening; and

(5) an operating member in engagement with the diaphragm and mounted for axial movement relative to the clamping member towards the seat to move the diaphragm towards the closed position;

(b) the second sub-assembly comprising:

(1) a drive assembly releasably secured to the clamping member by means separate from said securing means, the drive assembly including force means selectively operable to apply a force to the operating member towards the seat to move the diaphragm towards the closed position, said force means being separable with said drive assembly from a force applying relationship with respect to said operating member upon release of

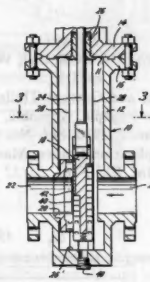
said drive assembly from said clamping member and without requiring separation of any component of either of said sub-assemblies from its respective sub-assembly and said first sub-assembly being constructed and arranged so as to be capable of remaining in its fully operable condition relative to said flow passage upon separation of said second sub-assembly from said first sub-assembly.

4,316,483

VALVE HAVING WEAR-PRONE PARTS REMOVABLE THROUGH BONNET AREA

Frank J. Jandrasi, Houston, Tex., assignor to Tapco International, Inc., Houston, Tex.

Filed Aug. 9, 1979, Ser. No. 65,019
Int. Cl.³ F16K *43/00*
U.S. Cl. 137—315 **12 Claims**



1. A valve having wear-prone parts removable through its bonnet area comprising,

a body having an opening at one end, a stop spaced from the one end, and a flow passage extending through the body between the one end and the stop,

at least one valve seat releasably disposed in the body and forming a portion of the flow passage,

a valve movable in the body arranged to move across the flow passage and to seat on the valve seat for closing the valve and to move out of the flow passage for opening the valve,

a pair of elongated guides in the flow passage, one each disposed on each side of the valve and extending lengthwise in the direction of movement of the valve, the guides disposed to be freely movable with respect to internal walls of the flow passage,

slides on the valve cooperating with the guides, the guides and slides operable to guide the valve into the open and closed positions, and

a bonnet releasably secured to the body and closing the opening, the opening being of a size permitting insertion of and the withdrawal from the body of the guides, the slide valve, and the valve seat,

the bonnet end and the stop end having recessed portions into which ends of the guides project operable to maintain the guides in operating position while the guides are free to move with respect to the internal walls of the flow passage to allow for thermal expansion of the guides.

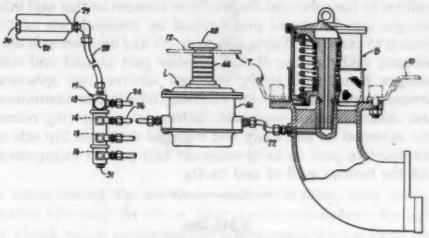
the guides the slides, the valve and at least the one valve seat being released for removal from the body by removing the bonnet.

4,316,484

LIQUID LEVEL VALVE

Joseph H. De Frees, 505 Liberty St., Warren, Pa. 16365

Filed Jan. 4, 1979, Ser. No. 1,002
Int. Cl.³ F16K *31/143, 31/145*
U.S. Cl. 137—389 **17 Claims**



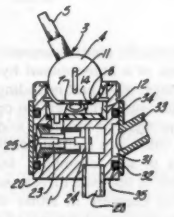
1. A liquid level valve having a valve housing and adapted for use in the interior top portion of a liquid storage tank having an emergency loading valve held open by a remote source of auxiliary pressurized air comprising; air control valve means disposed interiorly of the valve body in isolated relation to the liquid in the tank for reducing the auxiliary pressurized air to the emergency loading valve, the housing having an inlet for communicating the auxiliary pressurized air to the air control valve means as well as to the emergency loading valve, and coacting air pressure responsive actuating means disposed interiorly of the valve body responsive to increased valve interior air pressure within the liquid level valve caused by rising liquid in the tank for actuating the air control valve means to reduce the auxiliary pressurized air via a portion of the auxiliary pressurized air inlet and the air control valve means to permit closing of the emergency loading valve.

4,316,485

SINGLE HANDLE MIXING VALVE WITH IMPROVED SEAT

Gerald E. Christiansen, and William E. Politz, both of Flora, Ind., assignors to Stephen A. Young Corporation, Flora, Ind.

Filed Jun. 18, 1979, Ser. No. 49,197
Int. Cl.³ F16K *7/12*
U.S. Cl. 137—625.4 **1 Claim**



1. In a mixing valve for a single lever faucet wherein the valve has a body formed with an upwardly opening control cavity having a bottom wall, a control member in said cavity having a portion extending therefrom for moving said member, a seal in said cavity engaged by said member, a pair of fluid inlets to the body communicating with said cavity, at least one outlet from the body also communicating with said cavity, said control member comprising a spherical element with a flat portion thereon to manipulate the seal, and the seal comprising a diaphragm conforming to the element; the improvement comprising a removable seat unit positioned in said control

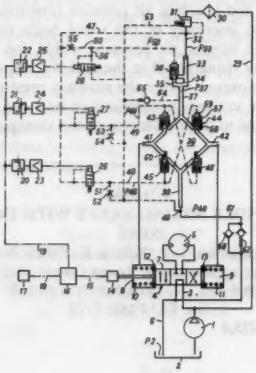
cavity to regulate the flow of fluid into and through said body, said seat unit comprising a disc-like part having a pair of inlet passages extending therethrough at positions in alignment with said fluid inlets, and inlet passages terminating at the upper ends thereof in tubular raised portions on the top side of said disc-like part at positions adjacent said diaphragm, said top side of said disc-like part being shaped at said inlet passages to conform to the spherical shape of said element so that said inlet passages can be closed and opened by manipulation of the element to cause the diaphragm to cover and uncover said inlet passages, said top side of said disc-like part around said inlet passages being sufficiently recessed relative said spherical element to provide a mixing chamber which is in continuous fluid communication with said outlet, and a snap-ring releasably mounted on said body and engaged with said top side of said disc-like part so as to maintain said part in engagement with the bottom wall of said cavity.

4,316,486

ELECTROHYDRAULIC CONTROL APPARATUS

Niels Tandrup, Nordborg, and Alex Petersen, Sonderborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Continuation of Ser. No. 19,076, Mar. 9, 1979, abandoned, which is a continuation of Ser. No. 840,383, Oct. 7, 1977, abandoned.
This application Feb. 28, 1980, Ser. No. 125,502
Claims priority, application Fed. Rep. of Germany, Oct. 9, 1976, 2645768
Int. Cl.³ F15B *13/043*
U.S. Cl. 137—625.64 **5 Claims**



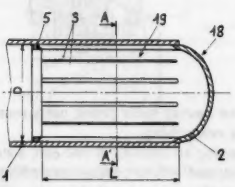
1. An electrohydraulic control assembly for controlling the operating direction of a bidirectional hydraulic work motor, comprising, a control valve unit including a motor controlling slide valve with pressure chambers on opposite sides thereof, neutral position springs and means in said chambers for maintaining said slide valve in a neutral position in the absence of unequal pressures in said chambers, said slide valve being selectively movable in opposite directions from a neutral position in response to pressure in either of said chambers for motor controlling purposes, a source of pressurized fluid and an exhaust tank, a hydraulic bridge circuit between said source and said tank having two supply branches connected to said source and two exhaust branches connected to said tank, pressure holding means between said exhaust branches and said tank for holding the bridge outlet pressure above atmospheric pressure, said bridge circuit having diagonally opposite ports between said supply and exhaust branches connected to said slide valve pressure chambers, valves having pressure operated chambers including a pressure operated supply valve in each supply branch and a pressure operated exhaust valve in each exhaust branch, said supply and exhaust valves being pressure operable to closed positions, pressure dissipation means between said pressure operated chambers of said exhaust valves and said tank to effect unloading of said exhaust valves in the absence of loading pressures, said exhaust valves having ball type closure elements, solenoid pilot valve means connected to respective pairs of said pressure operated chambers of said supply and exhaust valves to effect selective closing of said valves to selectively pressurize and exhaust said control valve unit chambers to cause said slide valve to move in a selected direction, said slide valve having rapid movement to a neutral position upon the deenergization of a respective pair of solenoid pilot valve means and the subsequent release of operating pressures in said bridge valves by the action of one of said neutral position springs causing said slide valve to move and force fluid from one of said chambers to the other through said bridge valves in said exhaust branches, and valve opening spring biasing means for each of said exhaust valves for rapidly overcoming said pressure holding and dissipation means to rapidly open said ball type closure elements thereof in the absence of a closing control pressure to avoid a cavitational action by preventing the closing of an exhaust valve due to a strong suction developed in one of said chambers as a result of said rapid movement of said slide valve.

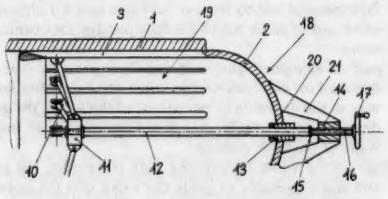
4,316,487

TUBULAR OBTURATOR FOR USE WITH A HOLLOW BODY

Gaston Denoor, Paris, and Georges Thillet, Grenoble, both of France, assignors to Neyrpic, Grenoble, France

Filed Mar. 7, 1980, Ser. No. 127,964
Claims priority, application France, Mar. 8, 1979, 79 05997
Int. Cl.³ F16L *55/12*
U.S. Cl. 138—89 **2 Claims**



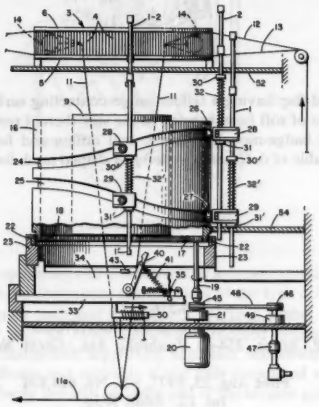


1. A self-locking tubular obturator for a hollow body having a cylindrical free opening and intended to be subjected to a pressure test, said obturator comprising a cover having a thickness sufficient to withstand the pressure under which the body is to be tested, and having an external diameter which is equal to the internal diameter of the opening of the body to be tested, with a reduction to allow for the play required for said cover to fit into the body, said cover being extended by a cylindrical skirt of the same diameter, said skirt being open at the end remote from said cover and being adapted to expand under the effect of the testing pressure and an annular sealing ring provided at said open end of said cylindrical skirt.

4,316,488
HIGH SPEED CIRCULAR LOOM FOR THE PRODUCTION OF TUBULAR FABRICS STARTING FROM THREADS, STRAPS AND THE LIKE MADE OF SYNTHETIC AND NATURAL SUBSTANCES

Benito Manini, Florence; Edoardo Furia, La Romola; Eugenio Stefani; Giuliano Baldi, both of Florence; Pasquale Barracchia, Milan; Beniamino Cacciapuoti, Aulla, and Bruno Mattei, La Spezia, all of Italy, assignors to Moplefan S.p.A., Milan, Italy

Filed Apr. 7, 1980, Ser. No. 137,912
Claims priority, application Italy, Apr. 11, 1979, 21772 A/79
Int. Cl.³ D03D *37/00*
U.S. Cl. 139—13 R **5 Claims**



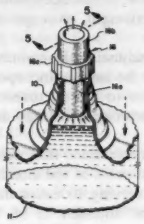
1. A circular loom for tubular fabric consisting essentially of strips of synthetic, artificial and natural substances, and especially strips of synthetic polymers, said loom being of the vertical heald type with healds arranged on concentric rings, with the drawing and the winding up of the fabric being formed on a fabric gauging cylinder arranged downstream of the shuttles, characterized in that said loom comprises one single rotary positive cam with a double track for the control of the alternate motion of the healds, said cam consisting essentially of a hollow cylinder turing coaxially inside the fabric-gauging cylinder and on whose outside cylindrical surface there are provided two closed track guide cams having a substantially helicoidal development, of which one is the cam controlling the motion of the external healds, while the other controls the internal healds, those guiding cams being associated with guide-pads which are integral with saddles carrying the healds mounted slidably in fixed vertical guides, thereby imparting to the two series of healds their alternate up-and-down motion, said healds being, moreover, axially constrained by elastic or resilient means to the corresponding supporting saddles so that they may be all blocked automatically in their lower position by the hooking in of their lower ends on corresponding oscillating hooks mounted displaceably in a coaxial alignment with the healds themselves, so as to retain all the warp strips on a level below the plane of sliding of the shuttles.

4,316,489
METHOD AND DEVICE FOR ELIMINATING AIR FROM WATER BED MATTRESSES

William A. Price, Salt Lake City, Utah, assignor to Anthony J. Bova, Stockton, Calif.

Filed Jul. 7, 1980, Ser. No. 166,318
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—1 **11 Claims**

1. A method of eliminating air or other gas from a water bed mattress equipped with a plugged and capped filling spout, comprising removing the plug and cap from the filling spout of such a mattress; fitting a check valve device fluid-tight into the filling spout; moving air or other gas toward the filling spout

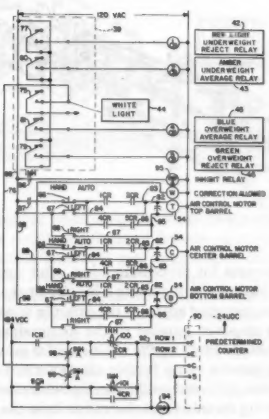


by manipulating the mattress while it is filled with water, thereby releasing the air or other gas to atmosphere through the check valve; removing the check valve device from the filling spout; and re-plugging and re-capping the filling spout.

4,316,490
ICE CREAM MAKING AND PACKAGING SYSTEM AND METHOD

Jerome K. Meyer, 380 Harrison St., Midvale, Utah 84047

Filed Oct. 2, 1979, Ser. No. 81,049
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—9 **21 Claims**



19. A continuous method for the manufacture of packaged ice cream, comprising the following steps:

(a) continuously mixing air in a controlled amount with an unfrozen ice cream mix;

(b) continuously delivering the mix to a freezing unit of the continuous type whereby air is incorporated in the frozen mix to produce ice cream with overrun;

(c) continually discharging equal metered volumes of ice cream into packaging containers;

(d) continually conveying the containers through a weighing station;

(e) automatically weighing each filled container as it is conveyed through the weighing station and deriving an underweight signal when a container is underweight relative to a target weight and, an overweight signal when it is overweight relative to the target weight, and also a signal when the weight is on the target;

(f) deriving an average underweight signal and an average overweight signal when a predetermined number of a

plurality of weighed containers are underweight or overweight.

(g) automatically adjusting the amount of air supplied to the mix to increase the amount incorporated in the frozen ice cream responsive to the occurrence of a predetermined number of overweight, average overweight and target signals.

(h) automatically adjusting the amount of air supplied to the mix to decrease the amount incorporated in the frozen ice cream responsive to the occurrence of a predetermined number of underweight, average underweight and target signals; and

(i) imposing a predetermined time delay between successive automatic adjustments of the amount of air supplied;

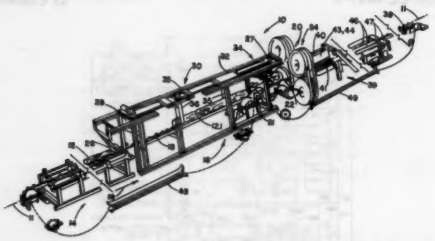
steps (g) and (h) serving to cause the weight of the filled containers to be adjusted to be within predetermined limits.

4,316,491

AUTOMATIC LOG PROCESSING APPARATUS AND METHOD

Roger M. Kearnes, 1994 W. 43rd Ave., Vancouver, B.C., Canada (V6M 2C6), and Gianni Q. Scaramella, 8695 Oak St., Vancouver, B.C., Canada V6P 4B2

Filed Nov. 13, 1979, Ser. No. 93,280
Int. Cl.³ B27M *1/00*; B27C *1/08*
U.S. Cl. 144—39 **14 Claims**



1. An apparatus for processing a log, after scanning dimensionally, by feeding the log along a longitudinal axis through a cutting means mounted adjacent the axis, the apparatus having: a rail means disposed parallel to the longitudinal axis, and a carriage means mounted on the rail means for movement therealong, the apparatus being further characterized by:

(a) clamp means mounted on the carriage means and adapted to clamp the log on side faces thereof to hold the log for feeding into the cutting means,

(b) orienting means cooperating with the carriage means and the clamp means to move the clamp means relative to the longitudinal axis to reposition the log in a desired orientation relative to the axis in accordance with the scanned dimensions.

4,316,492

WALLET WITH BADGE HOLDER

Stephan E. Plough, 15805 Oak Valley Rd., Ramona, Calif. 92065, and David L. Swartzendruber, Ramona, Calif., assignors to Stephan E. Plough, Ramona, Calif.

Filed Sep. 29, 1980, Ser. No. 191,990
Int. Cl.³ A45C *11/00*
U.S. Cl. 150—35 **4 Claims**

1. A combination wallet and badge holder comprising:

(a) a generally rectangular flexible back panel;

(b) a flexible front panel fastened to said back panel along at least two contiguous edges thereof to define a bill compartment;

(c) a badge-mounting panel mounted to at least one of the above stated panels;

(d) a badge cover flap mounted to at least one of the above-mentioned panels to removably protect and conceal a badge mounted on said badge-mounting panel, and

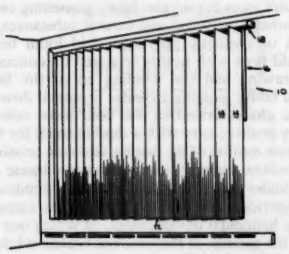
(e) said flap having a taffeta badge-contacting surface and a layer of soft foam bonded to the side thereof remote from said badge-mounting panel, said taffeta and foam being capable of deforming to define a shaped mask for a badge.

4,316,493

VERTICAL BLIND CONTROLS

Joseph P. Arena, 254-43 Pembroke Ave., Great Neck, N.Y. 11020

Filed Aug. 15, 1977, Ser. No. 824,834
Int. Cl.³ E06B *9/30*
U.S. Cl. 160—168 R **14 Claims**



1. Apparatus for traversing and rotating vertical blinds comprising:

support means for supporting the blind vanes including horizontally-extending track means and vane carrier means supported by said track means disposed to be horizontally traversed therealong, the vanes being supported by said carrier means;

traverse means for traversing the vanes including traverse actuating means therefor; and

rotation means for rotating the vanes including rotation actuating means therefor, a horizontally-extending rotation rod and first coupling means in said carrier means coupling the rotation rod and the vanes for rotating the vanes in response to rotation of the rotation rod;

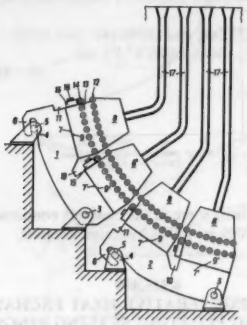
said traverse actuating means and said rotation actuating means including control means coupled to said traverse actuating means and to said rotation actuating means, said control means being traversable along said rotation rod, and said traverse and rotation actuating means being located together and traversable with one another.

4,316,494

SUPPORTING AND GUIDING STAND ARRANGEMENT TO BE USED IN A BOW-TYPE CONTINUOUS CASTING PLANT

Werner Scheurecker, Linz, Austria, assignor to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Feb. 25, 1980, Ser. No. 124,533
Claims priority, application Austria, Mar. 7, 1979, 1725/79
Int. Cl.³ B22D *11/00*
U.S. Cl. 164—448 3 Claims



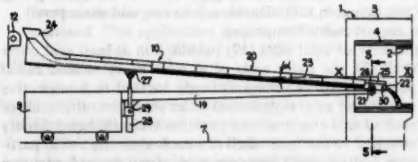
1. In a supporting and guiding strand arrangement to be used in a bow-type continuous casting plant of the type defining an arcuate guide path and including a carrying frame, an inner guideway and an outer guideway arranged opposite each other, enchangeable supporting segments supported on said carrying frame and movable along rails associated with said carrying frame towards an inner side of the arcuate guide path, space being provided between said segments to accommodate such movement, and rollers forming said inner and outer guideway and being mounted in said exchangeable supporting segments at a distance from one another, the improvement which is characterized in that each of said exchangeable supporting segments comprises at least one rim-side roller of said outer guideway which is detachably fastened to said segments, said carrying frame further including a recess defined in said carrying frame and a beam extending transversely to said carrying frame and being detachably fastened to said segment, said rim-side roller being mounted on said beam, said beam being unjournaled with respect to said carrying frame and being displaceable into the recess defined in said carrying frame after detachment from the segment.

4,316,495

METHOD AND INSTALLATION FOR CENTRIFUGAL CASTING

Michel Pierrel, Pont-a-Mousson, France, assignor to Pont-a-Mousson S.A., Nancy, France

Filed Jun. 18, 1980, Ser. No. 160,706
Claims priority, application France, Jun. 25, 1979, 79 16251
Int. Cl.³ B22D *13/02, 13/12*
U.S. Cl. 164—457 3 Claims



1. A method for manufacturing a tubular body by centrifugation wherein molten iron is poured into a rotary mold via a feed channel, comprising the steps of:

(a) inserting a pouring spout end of the feed channel through the mold to a position proximate a remote end thereof,

(b) establishing relative longitudinal movement between the feed channel and the mold in a direction to gradually withdraw the feed channel from the mold,

(c) supplying the feed channel with molten iron at a constant rate during said relative longitudinal movement,

(d) terminating the supply of molten iron to the feed channel at a predetermined time before the pouring spout reaches a near, exit end of the mold,

(e) progressively increasing the inclination of the feed channel after said supply termination to maintain a constant flow rate of molten iron from the pouring spout and into the mold until the pouring spout leaves the mold, and to empty the feed channel, and

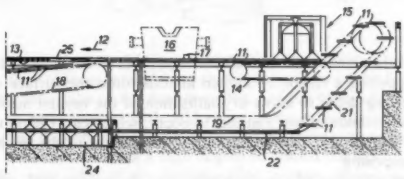
(f) maintaining said relative longitudinal movement constant during steps (c), (d) and (e).

4,316,496

CONTINUOUS CASTING OF METAL STRIP

Gene D. Spenceley, Stokesley, England, assignor to British Steel Corporation, London, England

Filed Jul. 23, 1980, Ser. No. 171,440
Claims priority, application United Kingdom, Jul. 25, 1979, 25990/79
Int. Cl.³ B22D *11/06*
U.S. Cl. 164—477 13 Claims



1. Apparatus for producing a ferrous feedstock for subsequent use in a melting or smelting furnace comprising a multiplicity of abutting separable and independent channel shaped mould segments, means operable to drive such mould segments continuously about an endless path which includes a generally horizontal upper flight and a vertical displaced lower flight such drive means comprising a member positioned at the upstream end of such horizontal upper flight and movable into engagement with a complementary part of an adjacent mould segment to drive such segment along the upper flight so as to present a continuous substrate surface with no spacings between individual mould segments, a casting station operable to cast molten ferrous material continuously on to said upper flight of said substrate surface to produce on cooling a solidified ferrous strip, means for stripping such strip from the substrate and for transferring said separable and independent channel shaped mould segments to said vertical displaced lower flight, means for returning said separable and independent channel shaped mould segments from said vertical displaced lower flight to said generally horizontal upper flight and means for fragmenting the solidified strip into segments of a size suitable for use as a ferrous feedstock.

10. A method of producing a fragmented feedstock comprising the steps of continuously casting molten material from a casting station on to a channel shaped substrate surface consisting of a multiplicity of abutting separable and independent channel shaped mould segments moving in a generally horizontal path continuously past the casting station to produce a solidified metal strip, separating the solidified strip from the substrate, transferring said separable and independent channel shaped mould segments from said generally horizontal path to a vertical displaced path, returning said separable and indepen-

dent channel shaped mould segments to said generally horizontal path and fragmenting the solidified strip separated from said substrate into fragments of a size suitable for use as the required feedstock.

4,316,497

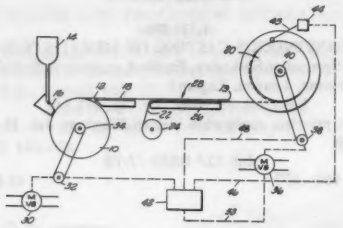
METHOD AN APPARATUS FOR FEED ON TO A TAKE-UP REEL IN HIGH SPEED SILICO

G. Felix Wakefield, Woodland Hills, and David L. Bender, Thousand Oaks, both of Calif., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed May 9, 1980, Ser. No. 148,319

Int. Cl.³ B22D *11/06*

U.S. Cl. 164—479 **11 Claims**



1. In a method for manufacturing a thin ribbon of material by depositing a ribbon of molten material onto the surface of a rotating drum to allow crystallization of the molten material into a ribbon of cast material to occur, which cast ribbon is to be stored on a take-up reel, an improvement in the method, comprising:

pre-winding of a starting strip onto the take-up reel, which starting strip passes through a contact zone prior to being wrapped around the take-up reel, said contact zone being a zone for contact between the strip and the cast ribbon;

passing the leading edge of the cast ribbon over the starting strip in the contact zone at a speed sufficiently close to that of the starting strip in the contact zone to allow the cast ribbon to be frictionally engaged with, and guided onto the take-up reel by, the starting strip and to pass onto the take-up reel in contact with the starting strip without bunching of the cast ribbon or significant stretching of the cast ribbon.

4,316,498

INVESTMENT SHELL MOLDING MATERIALS AND PROCESSES

Robert A. Horton, Chesterland, Ohio, assignor to Precision Metalsmiths, Inc., Cleveland, Ohio

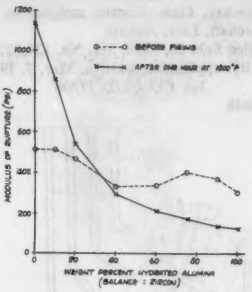
Filed Jan. 18, 1980, Ser. No. 113,180

Int. Cl.³ B22C *1/00*

U.S. Cl. 164—519 **2 Claims**

1. An-unfired, multi-layered ceramic shell mold which consists essentially of particulate refractory material and a binder, the refractory material containing in amount by weight from about 20% to 100% hydrated alumina.

2. In a method of making a refractory ceramic shell mold by the repeated steps of dipping a pattern in a slurry to form a coating, the slurry consisting essentially of a binder liquid and a refractory powder, stuccoing the coating while wet with refractory grains, and drying the stuccoed coating, the improvement wherein the refractory powder content of the



slurry used for at least some of the coatings contains in amount by weight from 20% to 100% hydrated alumina.

4,316,499

ROTARY, REGENERATIVE HEAT EXCHANGER HAVING FLOATING SEALING RINGS

Werner Schlageter, Saltsjö-Boo, Sweden, assignor to Svenska Rotor Maskiner Aktiebolag, Stockholm, Sweden

Filed Apr. 16, 1980, Ser. No. 140,678

Int. Cl.³ F28D *19/00*

U.S. Cl. 165—9 **9 Claims**

1. In a rotary regenerative heat exchanger comprising first and second main parts relatively rotatable with respect to each other about a common central axis, a clearance being defined between said main parts, said first main part comprising a regenerator body (**1**) which includes an inner cylindrical post shell (**2**), an outer cylindrical shell (**3**), and a plurality of radial partition walls (**4**) interconnecting said outer shell (**3**) with said inner shell (**2**), said radial partition walls each having an inner end coupled to said inner shell (**2**) and an outer end coupled to said outer shell (**3**), said radial partition walls (**4**) forming a plurality of open-ended sectorial compartments containing a regenerative heat transferring mass providing passages for flow of fluid media therethrough from and to the ends of the regenerator body (**1**); said second main part comprising a duct part (**1***b*) providing ducts having inlets and outlets for flow of heat emitting and heat absorbing fluid media to and from the opposite ends of said regenerator body (**1***a*); at least one of the ends of said outer shell (**3**) being provided with a sealing ring (**8**,**9**) positioned in said clearance between said main parts;

the improvement comprising:

a plurality of axial slots (**17**) provided in at least said outer shell (**3**), the outer ends of at least every second radial partition wall (**4**) being slidingly located in a respective one of said axial slots in said outer shell, the other ends of each of said every second partition walls (**4**) being fixedly attached to the inner shell (**2**), each alternate radial partition wall, located between said every second partition walls, being slidably coupled at one side thereof to one of said inner and outer shells and being fixed to the other of

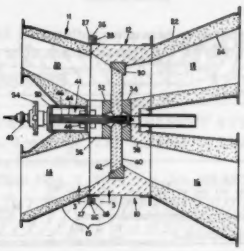
said shells at the other side of said partition walls, said partition walls (4) further slidingly engaging said sealing ring (8,9) in the radial direction of said rotary regenerative heat exchanger.

4,316,500

CERAMIC HEAT EXCHANGER WITH HOT ADJUSTMENT FACE SEALS

Charles B. Gentry, Belmont, and Robert M. Scanlon, Rockford, both of Mich., assignors to Granco Equipment, Inc., Belding, Mich.

Filed May 28, 1980, Ser. No. 153,928
Int. Cl.[3] F28D *19/04*
U.S. Cl. 165—9 20 Claims



1. In a heat exchanger for hot gases including a heat exchanger wheel having a plurality of axially extending gas passages therethrough and means for mounting said wheel for rotation about a central axis thereof comprising:

first and second housing sections defining a heat exchanger housing;

shaft means journalled within said first housing section for rotatably mounting said wheel;

bearing means mounted to said first housing section for supporting said shaft means;

a first sealing member secured within said first housing means and a second sealing member secured within said second housing section, said sealing members being disposed adjacent opposite faces of said wheel and diametrically across the face of said wheel to form gap seals;

the improvement which comprises:

means for axially displacing said wheel relative to said sealing members while said wheel is hot and rotating; and

means for displacing said first and second housing sections relative to each other;

whereby said wheel is axially displaceable to adjust the gap of the seal and to form the gap seal between said wheel and said first sealing member and said housing sections are displaceable to adjust the gap of the seal and to form the gap seal between said wheel and said second sealing member.

4,316,501

HEAT EXCHANGER WITH LEAKAGE COLLECTOR

Donald R. Bowden, and Bruce J. Novell, both of Huntsville, Ala., assignors to Solar Unlimited, Inc., Huntsville, Ala.

Continuation-in-part of Ser. No. 836,812, Sep. 26, 1977, abandoned. This application Aug. 8, 1979, Ser. No. 64,668
Int. Cl.[3] F28D *7/02*; F28F *13/14*
U.S. Cl. 165—70 1 Claim

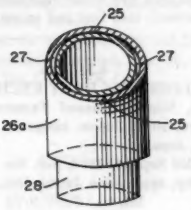
1. A heat exchanger for transferring heat between a first liquid and a second liquid comprising:

a heat exchanger shell member having a central portion extending between and terminating in two end portions which respectively include an inlet duct and an outlet duct for said liquid;

a double-walled member of the heat exchanger comprising two tubes including an outer tube of one diameter having outwardly extending fins, and an inner tube of smaller diameter extending concentrically through the outer tube and being a snug fit therewithin, the inner tube carrying said second liquid, the outer tube comprising a seamless tube having a helical fin integrally formed on its outer surface, and its inner surface having an undulating helical pattern of ridges and depressions whose pitch is the same as the pitch of the helical fin;

an annular core member extending lengthwise in the central portion of the shell member, the diameter of the core member being within a range extending from about the diameter of said outer tube as measured without the fins to about twice that diameter;

the double-walled member being distorted to form a helical volute tightly surrounding said core member for a length about equal to the length of said central portion of the shell member so that the fins of successive convolutions substa .tially lie against the core member, and the inside diameter of the central portion of the shell member being



about equal to the outer diameter of the convolutions of the volute as measured to the outer surfaces of the fins;

the outer tube of the double-walled member being elliptical in cross-section with said ridges pressed tightly against and distorting the outer surface of the inner tube to form tube zones having a high degree of mutual contact;

the outer tube of the double-walled member having ends which are aligned along the axis of the helical volute and are spaced apart therealong by a distance greater than the length of the heat exchanger shell member, the outer tube being integrally continuous between its outer ends; and

the volute being contained in the central portion of the shell member and the ends of the outer tube being free of fins and extending through and to the outside of both end portions of the shell member and having their external peripheries sealed to the shell member where they pass through each end portion, and the inner tube extending from the shell member beyond said sealed peripheries of the outer tube ends, whereby any leakage of either tube will escape between the tubes and discharge outside of the shell member.

4,316,502

HELICALLY FLIGHTED HEAT EXCHANGER

David M. Sanborn, Roswell, and Andrew L. Blackshaw, Dunwoody, both of Ga., assignors to E-Tech, Inc., Atlanta, Ga.

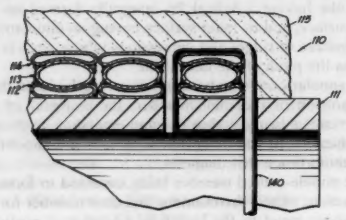
Filed Nov. 3, 1980, Ser. No. 202,888
Int. Cl.[3] F28D *7/02*
U.S. Cl. 165—140 8 Claims

1. A heat transfer coil for use with heat transfer fluids between which heat is to be transferred comprising:

a first piece of heat conductive tubing wound in a helical configuration defining a plurality of first helical flights having an outboard portion thereon; and

a second piece of heat conductive tubing wound in a helical configuration defining a plurality of second helical flights having an inboard portion thereon, said first and second helical flights arranged so that said outboard portion of said first helical flights is aligned with and in conforming

intimate physical contact with said inboard portion of said second helical flights, each of said first and second pieces of tubing defining a fluid passage therethrough whose cross-sectional areas have been adjusted by internally



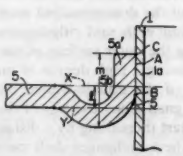
pressurizing said pieces of tubing to non-elastically deform both of said pieces of tubing to change the cross-sectional area of said passage through each of said pieces of tubing to a desired final size while maintaining intimate physical contact between said first and second helical flights.

4,316,503

SOLDERLESS HEAT EXCHANGER

Shogo Kurachi, Nishio; Masami Tamura, Kariya, and Akio Ueda, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 16, 1980, Ser. No. 187,959
Claims priority, application Japan, Oct. 12, 1979, 54-132146
Int. Cl.³ F28F 9/16
U.S. Cl. 165—175 **5 Claims**



1. In a heat exchanger having a pair of opposing tanks, a metal header plate of uniform thickness fixed to the open end of each of said tanks, a plurality of metal tubes extending through said header plates and providing a communication between said tanks, and a plurality of metal plate fins disposed on the outer surface of said tubes, said tubes being joined to said fins and said header plates solely through expansion of said tubes,

an improvement which comprises a collared portion on the header plate formed at each joint between each header plate and each tube, and an annular corrugation formed in the plate around the periphery of each collared portion and defining an annular groove, whereby said header plate and said tube are rigidly connected to each other solely by the pressure contact therebetween, due to a resiliency provided by said annular corrugation.

4,316,504

CHECK/RELIEF VALVE FOR AN INFLATABLE PACKER SYSTEM

Randy S. Baker, Long Beach, and Gerald C. Eckmann, La Puente, both of Calif., assignors to BJ-Hughes Inc., Long Beach, Calif.

Filed Feb. 11, 1980, Ser. No. 120,585
Int. Cl.³ E21B 33/127; F16K 15/08
U.S. Cl. 166—53 **4 Claims**

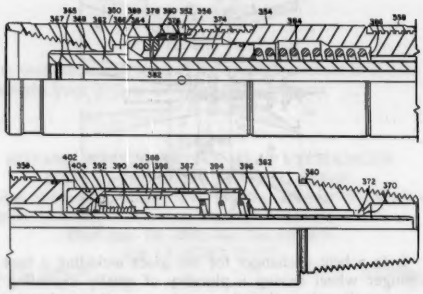
1. A relief valve adapted for use in an inflatable packer system of the type having a positive displacement pump located upstream in the system and at least one packer element located downstream in the system below the pump, comprising:

a longitudinally extending cylindrical outer member located intermediate said pump and said packer elements;

vent means through the wall of said outer member;

a cylindrical inner member spaced apart from said outer member, thereby providing an inflation fluid passageway between said inner and outer cylindrical members said inner member being positioned in a fixed manner with respect to said cylindrical outer member;

a ring-shaped relief piston surrounding said cylindrical inner member in said inflation fluid passageway, said ring-shaped relief piston having a grooved inner wall providing a fluid passageway for fluid pumped between said



piston and said inner cylindrical member and said piston having a port passing between said groove in said inner wall and the outer wall of said piston, said port providing a passageway for fluid pumped through said piston to said vent means;

an annular valve seal extending circumferentially about said relief piston between said piston outer wall and said cylindrical outer member; and

said relief piston being adapted to move longitudinally between an upward non-vented position with said piston port located above said valve seal and a downward vented position with said piston port located below said valve seal and aligned with said vent means in said cylindrical outer member to vent inflation fluid to the exterior of the valve when inflation fluid pressure exceeds the pressure externally of said valve by a predetermined amount.

4,316,505

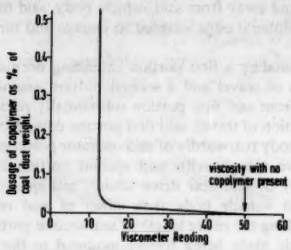
PUMPING OF AQUEOUS SLURRIES

Steven A. Lammiman, Rua Ministro de Godoi, 628 - Perdizes - SP, Brazil, and Michael P. Hardman, 36 Shrublands Rd., Berkhamsted, Herts., England

Filed Jan. 11, 1980, Ser. No. 111,429
Claims priority, application United Kingdom, Jan. 12, 1979, 01166/79
Int. Cl.³ E21B 33/13
U.S. Cl. 166—293 **3 Claims**

1. A method for the sealing of a disused mining tunnel involving mineral dust produced during mining, said method comprising the step of forming a pumpable aqueous slurry of the mineral, water, cement and a dispersing agent comprising a copolymer of a hydrophilic material and a less hydrophilic material, said less hydrophilic material being present in the copolymer in an amount between 5 and 50% by weight, the ratio of carboxyl groups to carbon atoms in the copolymer being about 0.4 and the molecular weight of the copolymer is

7000 and 8000 to achieve the desired copolymer properties, said dispersing agent being a water soluble copolymer of poly-



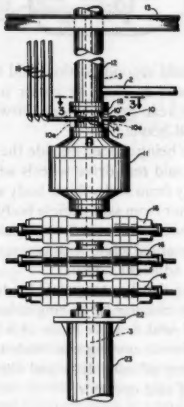
acrylic acid and polymethacrylic acid, and then pumping the slurry into the mine and allowing it to set there.

4,316,506

OIL WELL BLOW-OUT SAFETY SYSTEM

Douglas Poole, Jonesville, La., assignor to Lizzy Emergency Systems, Inc., New Orleans, La.

Filed Nov. 1, 1979, Ser. No. 90,487
Int. Cl.³ A62C *35/12*
U.S. Cl. 169—69 **7 Claims**



1. A system for delaying the ignition of and assisting in the extinguishing of a fire around the oil pipe stem on an oil drilling rig during a blowout by injecting chemicals into the flow of hydrocarbons in the drill stem before the hydrocarbons are exposed to the ambient at the well head, the drilling rig having a stack of safety devices for horizontally closing off the well located between the well casing and the rig floor and below the mud return line element, comprising:

a. spool chemical injection apparatus incorporated as an in-line section of the stack above the safety devices but below the rig floor and having one-way flow valve means associated therewith for allowing the injection of pressurized chemicals directly into the flow of hydrocarbons in the drill pipe before the hydrocarbons are exposed to the atmosphere above the safety devices; said spool apparatus further including

i. steel ring flange seal means at each vertical end of said spool apparatus for fixedly attaching the ends of said spool apparatus at the bottom to the upper most one of the safety devices and at the top to the mud return line element;

ii. a plurality of check valves located equidistant from one another around the exterior, circumferential surface of said spool apparatus with each connected to said conduit means; and

iii. openings in the exterior surface of said spool apparatus at each location of each said check valve extending from said check valve through the wall of said spool apparatus to the interior surface of said spool apparatus for injecting chemicals from said check valve to the flow of hydrocarbons within said spool apparatus;

b. conduit means attached to said check valve means on said spool injection apparatus for transporting the chemicals from storage to said spool injection apparatus;

c. a storage source of chemicals associated with the rig and operatively connected to said conduit means; and

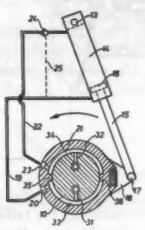
d. activation means associated with said conduit means for activating the system for delivery of the chemicals when desired to said spool injection apparatus and into the flow of hydrocarbons.

4,316,507

REVERSIBLE PLOW

Rolf E. Lindqvist, Linköping, Sweden, assignor to Aktiebolaget Overums Bruk, Overum, Sweden

Filed Apr. 24, 1980, Ser. No. 143,330
Claims priority, application Sweden, Apr. 26, 1979, 7903661
Int. Cl.³ A01B *3/34*
U.S. Cl. 172—225 **7 Claims**



1. In a reversible plow having a frame provided with plow shares directed to the left and to the right, said frame being mounted to turn in a support part through about 180° about a horizontal axis extending in the direction of movement of said plow, said turning being caused by a hydraulic cylinder that is swingably supported in a support part and having a piston that moves forward and backward in said cylinder during said turning action, the improvement comprising: a turning shaft on said frame, a reversing valve, said valve being combined with said shaft, the latter being part of said reversing valve controlling the flow of oil to said cylinder, and a housing surrounding said shaft and being connected to said support part and being a coacting part of said reversing valve.

4,316,508

AUTOMATIC RIPPER RESET MECHANISM

Carroll J. Whitfield, Tifton, Ga., assignor to Beatrice Foods Co., Chicago, Ill.

Filed Feb. 8, 1980, Ser. No. 119,922
Int. Cl.³ A01B *13/08*
U.S. Cl. 172—271 **11 Claims**

1. In a sub-soil ripper apparatus having a ripper blade bearing a distally disposed and forwardly extending soil engaging ripper shank and a proximally disposed and forwardly exnding ripper head, said ripper head mounted for downward pivotal motion of the ripper head and rearward pivotal motion of the attached ripper shank about a ripper pivot shaft disposed near the proximal end of the ripper shank when the ripper blade strikes a substantial sub-soil obstruction and for return forward pivotal motion when the ripper is reset from a sprung position to a ripping functional position, the improvement of an automatic ripper reset machanism comprising:

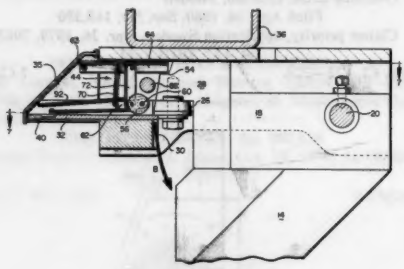
a punch fixedly disposed near the distal, free end of the ripper head for downward arcuate motion in response to rearward pivotal motion of the ripper shank upon the ripper blade striking an obstruction;

a die disposed adjacent said punch and having a surface contour corresponding to that of said punch for mating cooperation therebetween;

an incrementally fed shear bar disposed opposite said punch and supported and movable in a shear bar track, said shear bar having a distal end which is disposed between said punch and said die to secure the ripper in ripping functional configuration;

a reset mechanism frame attached to and supported by the implement frame;

spring loaded push block means disposed on said reset mechanism frame for urging engagement with the proximal end of said shear bar to advance said shear bar radially of and intersecting the path of arcuate motion of said punch to dispose said shear bar between said punch and said die when in the ripping position;



brake means for overcoming the radial advance of said shear bar when the ripper blade is disposed in the rearwardly sprung position when the ripper blade has struck an obstruction, said brake means including an eccentrically mounted brake disc having a friction radial edge for engagement with said shear bar, and further having biasing means disposed opposite the eccentric journal of said brake disc for pivoting said brake disc downwardly about its eccentric journal into frictional contact with said shear bar to halt movement of said shear bar in response to said push block means; and

torque storage means connected to the ripper pivot shaft for receiving torque from the turning of the shaft in response to pivoting of the ripper blade caused by the striking of a sub-soil obstruction and for retransmitting the stored torque to the ripper shaft when the obstruction is removed from the path of the ripper blade, thereby to return and reset the ripper from the spring position to the ripping position.

4,316,509

AGRICULTURAL VEHICLE FOR FORMING WATER RINGS

Morris M. Hallum, 3558 Sunset Ave., P.O. Box 86, Scottsmoor, Fla. 32775

Filed Sep. 19, 1979, Ser. No. 77,101
Int. Cl.³ A01B *59/046, 79/00*
U.S. Cl. 172—297 **9 Claims**

1. An agricultural vehicle for forming a substantially circular water ring in the soil for the planting of a young tree or the like comprising:

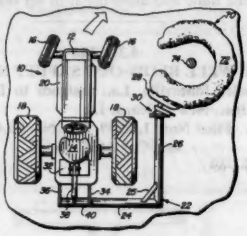
a vehicle body having an operator position;

a pair of rear drive wheels supporting said body;

engine means for rotating said wheels to move said body across the soil in a direction of travel responsive to control by the operator in said operator position;

a single blade having a front face directed generally forwardly and away from said vehicle body, said blade having a peripheral edge adapted to engage and turn up the soil;

a boom including a first portion extending normal to said direction of travel and a second portion extending forwardly from said first portion substantially parallel with the direction of travel, said first portion coupled with said vehicle body rearwardly of said operator position and said rear drive wheels with said second portion extending forwardly of said rear drive wheels and spaced further from said vehicle body than either of said rear drive wheels along the entire length of said second portion, with said single blade being fixedly mounted to the forward



extremity of said second portion, said boom being free of structure spaced as close or closer to the vehicle than either of said rear drive wheels forwardly of said first portion of said boom;

said single blade being spaced outside the direction of travel of the one of said rear drive wheels adjacent thereto in a direction away from said vehicle body such that said blade is spaced further from said vehicle body than either of said rear drive wheels and said face of said blade being oriented at a substantial angle with respect to the direction of travel of said adjacent wheel;

means for raising and lowering said blade; and wherein

said substantially circular water ring is formed in the soil by movement of said vehicle body in a generally circular direction of travel, causing said blade to push up said soil across said face of said blade and form said ring under observation of said operator.

4,316,510

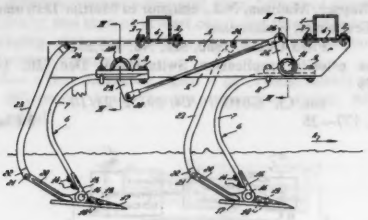
SOIL CULTIVATING MACHINE WITH INTERCONNECTED PIVOTED MEMBERS

Cornelis van der Lely, 7 Brüchenrain, Zug, Switzerland

Filed Jan. 2, 1980, Ser. No. 109,149
Claims priority, application Netherlands, Jan. 11, 1979, 7900218; Apr. 6, 1979, 7902707
Int. Cl.³ A01B *15/00*
U.S. Cl. 172—657 **15 Claims**

1. A soil cultivating machine comprising a frame and at least two soil working members being mounted on a common beam of said frame, one behind the other with respect to the normal direction of machine travel and on opposite sides of said beam, said two members being linked to one another and detachably fastened with said beam as a unit to the remainder of the frame, said common beam extending in the direction of travel and bridging two transverse frame beams, said common beam being a channel beam with sides and said members being located adjacent a respective beam side, each working member

comprising a supporting arm and said arm having an upper end pivotally connected to said common beam, said upper end



being fastened to stub shaft means that comprises a stub shaft journalled to the sides of said common beam.

4,316,511

IMPLEMENT FRAME, ESPECIALLY FOR AGRICULTURAL MACHINES

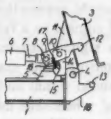
Helge H. Andersen, Soroe, Denmark, assignor to Kongskilde Koncernselskab A/S, Soroe, Denmark

Filed Nov. 9, 1979, Ser. No. 92,848

Claims priority, application Denmark, Dec. 12, 1978, 55791/78

Int. Cl.³ A01B *63/10*

U.S. Cl. 172—776 **3 Claims**



1. An implement frame, particularly for agricultural machines, comprising

a main section to be mounted on a tractor or another vehicle;

at least one end section or wing which is hinged to the main section and by means of a driving cylinder is foldable between an operating position in which it is in alignment with this main section and a transport position approximately perpendicular thereto;

first and second stops secured to said main section; and

first and second latch members for arresting the end section in its operating and transport positions, respectively,

said first latch member being pivotally mounted on said end section at a distance from the axis of its hinge connection with the main section and being, at one end, pivotally connected with the piston rod of the driving cylinder and forming, at its other end, a hook arranged for engagement with a stop on the main section, when the end section is folded into its operating position, and for disengagement on retaction of the piston rod, and

said second latch member being hingedly connected with the first latch member so as to engage said second stop on the main section at the end of the movement of the end section toward its transport position and to disengage therefrom when pressure is exerted on the first latch member through the piston rod, wherein

both latch members are are journaled on a common axis in relation to the end section, and that the second latch member by means of a spring is urged against a predetermined basic position in relation to the first latch member corresponding to the mutual angular position of the two latch members, when the end section is arrested in its transport position.

4,316,512

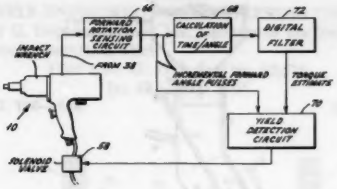
IMPACT WRENCH

Ian E. Kibblewhite, Dublin, Ireland; John T. Boys, Birkenhead, New Zealand, and Angelo L. Tambini, Manor Kilbride, Ireland, assignors to SPS Technologies, Inc., Jenkintown, Pa.

Filed Apr. 4, 1979, Ser. No. 27,127

Int. Cl.³ B25B *23/147*

U.S. Cl. 173—12 **77 Claims**



1. Apparatus for providing a parameter representative of torque in a tightening system having a pulsed output for periodically applying a tightening moment to a member, said parameter being derived from forward rotation angle measurement of the member being tightened.

4,316,513

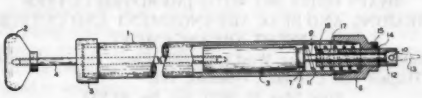
NAIL DRIVING IMPACT HAMMER

Dwight Harris, 685 Maryland Ave., Washington, Pa. 15301

Filed Feb. 4, 1980, Ser. No. 118,573

Int. Cl.³ B25C *5/06*

U.S. Cl. 173—91 **1 Claim**



1. A reciprocating hammer for use in mines and the like comprising an elongated cylindrical tube, a cup-shaped end cap screw threaded to and closing the top of said tube, said end cap having a hole, a ram contained in said tube and having a rod extending through said hole and being operable by a knob externally of the tube, a second cup-shaped end cap screw threaded to the other end of said tube, and having a hole, a drive rod and surrounding sleeve extending through said last mentioned hole, an anvil supported by said drive rod, a spring surrounding said sleeve in said tube and having a free end biased against the bottom of said anvil, a well portion in the outer portion of said sleeve for holding said nail, and a permanent magnet embedded in said well portion of said sleeve for magnetically and stationarily holding the nail to be driven by reciprocation of said ram against said anvil, whereby sparks created between the ram and anvil will be totally enclosed by said cylindrical tube.

4,316,514

METHOD OF BINDING DUST CREATED WHEN DRILLING ROCK WITH A DRILLING ROD

Göran H. Jysky, Nyköping, Sweden, assignor to Atlas Copco AB, Stockholm, Sweden

Filed Aug. 15, 1980, Ser. No. 178,414

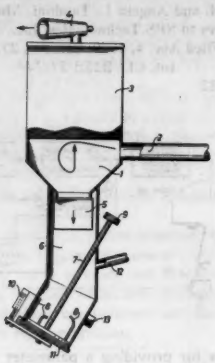
Claims priority, application Sweden, Aug. 22, 1979, 7907026

Int. Cl.³ E21C *7/02*; B01D *45/12, 46/48*

U.S. Cl. 175—66 **6 Claims**

1. A method of binding dust created when drilling rock with a drilling rod having a bit, by mixing said dust with a liquid, comprising the steps of collecting the dust on the bottom of a dust-separating means, feeding the dust in batches of given size to a mixing chamber, supplying to said chamber a liquid binder

in an amount corresponding to the size of said batch of dust; mixing the dust and liquid by stirring while a further batch of



dust is collected in the separating means; and discharging the resultant mixture from the mixing chamber before the next batch of dust is fed to the mixing chamber.

4,316,515

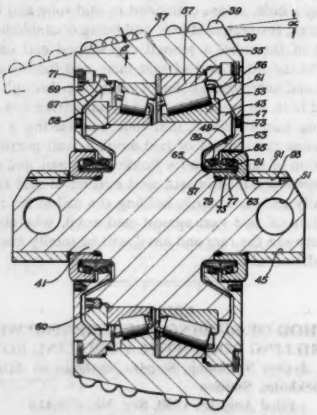
SHAFT DRILL BIT WITH IMPROVED CUTTER BEARING AND SEAL ARRANGEMENT AND CUTTER INSERT ARRANGEMENT

Rudolph C. O. Pessier, West University Place, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed May 29, 1979, Ser. No. 43,533

Int. Cl.³ E21B *10/22*

U.S. Cl. 175—372 **18 Claims**



1. A rotatable cutter for earth boring equipment comprising:

an axle having an enlarged central portion and reduced portions on both sides of lesser diameter than the central portion;

a cutter sleeve rotatably mounted on the central portion; and

seal means between the reduced portions and the cutter sleeve for preventing ingress of grit.

4,316,516

WEIGHING BALANCE WITH AUTOMATIC ZERO CORRECTION

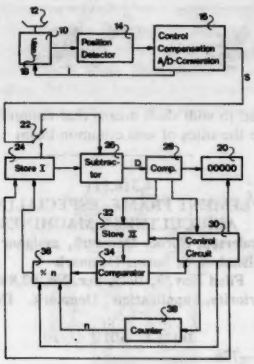
Walter Kupper, Madison, N.J., assignor to Mettler Instrumente AG, Greifensee, Switzerland

Filed Oct. 9, 1980, Ser. No. 195,331

Claims priority, application Switzerland, Dec. 20, 1979, 11309/79

Int. Cl.³ G01G *19/04, 19/52, 23/10*

U.S. Cl. 177—25 **3 Claims**



1. In weighing method comprising the steps of periodically generating digital weight proportional signals, comparing said weight proportional signals to a reference signal and generating main difference signals corresponding to the difference therebetween, comparing said main difference signals to a predetermined threshold signal and furnishing a first or a second difference signal when said main difference signal is, respectively, less than or at least equal to said predetermined threshold signal, and displaying only said second difference signal, the improvement comprising the steps of

storing a first difference signal; algebraically adding subsequently generated first difference signals to the so-stored first difference signal, thereby creating a cumulative first difference signal;

comparing said cumulative first difference signal to a predetermined limiting value and furnishing a comparator output signal only when said cumulative first difference signal exceeds said limiting value;

counting the number of first difference signals received until said cumulative first difference signal exceeds said limiting value signal and furnishing a counting signal signifying the number of so counted first difference signals;

dividing said cumulative first difference signal by said counting signal thereby creating an average difference signal; and

wherein said average difference signal is applied to said weight proportional signals or said reference signal when generating said main difference signals.

4,316,517

WEIGHING SCALE WITH IMPROVED ZERO CORRECTION

Eberhard Jonath, Volketswil, Switzerland, assignor to Mettler Instrumente AG, Greifensee, Switzerland

Filed Oct. 9, 1980, Ser. No. 195,477

Claims priority, application Switzerland, Dec. 20, 1979, 11311/79

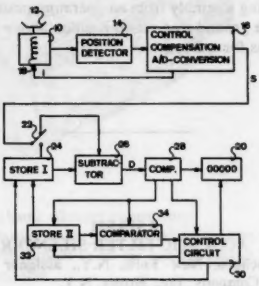
Int. Cl.³ G01G *19/04, 19/52, 23/10*

U.S. Cl. 177—25 **3 Claims**

1. In a weighing method comprising the steps of periodically generating digital weight proportional signals, comparing said weight proportional signals to a reference signal and generat-

ing main difference signals corresponding to the difference therebetween, comparing said main difference signals to a predetermined threshold signal and furnishing a first or a second difference signal when said main difference signal is, respectively, less than or at least equal said threshold signal, and displaying said second difference signal, the improvement comprising the steps of

when a first difference signal is generated: storing said first difference signal thereby creating a stored difference signal;



comparing the sign of a first difference signal generated in a subsequent measuring to the sign of said stored difference signal and

furnishing a comparator output signal only when the so compared signs are the same; and

changing said reference signal by a value corresponding to said stored difference signal only in response to said comparator output signal.

4,316,518

AUTOMATIC ZERO CORRECTION APPARATUS FOR WEIGHING BALANCES

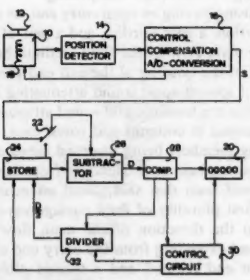
Eberhard Jonath, Volketswil, Switzerland, assignor to Mettler Instrumente AG, Greifensee, Switzerland

Filed Oct. 9, 1980, Ser. No. 195,332

Claims priority, application Switzerland, Dec. 20, 1979, 11310/79

Int. Cl.³ G01G *19/04, 19/52, 23/10*

U.S. Cl. 177—25 **5 Claims**



1. In a weighing method comprising the steps of periodically generating digital weight proportional signals, comparing said weight proportional signals to a reference signal and generating main difference signals corresponding to the difference therebetween, comparing said main difference signals to a predetermined threshold signal and displaying only main difference signals at least equal to said threshold signal, the improvement comprising the steps of

dividing each of said main difference signals less than said threshold signal by a predetermined factor, thereby creating a fractional difference signal; and

including said fractional difference signal when comparing the next subsequent one of said weight proportional signals to said reference signal, whereby the next furnished one of said main difference signals depends in part upon said fractional difference signal.

4,316,519

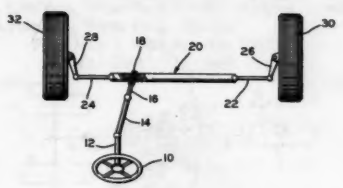
SELF-ENERGIZED POWER STEERING UNIT

Alistair G. Taig, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Nov. 13, 1979, Ser. No. 93,326

Int. Cl.³ B62D *5/06*

U.S. Cl. 180—148 **35 Claims**



23. A self-contained power steering unit comprising an elongate housing, a tubular sleeve held in said housing for longitudinal movement therein, means in said sleeve forming a hydraulic accumulator at one end portion and a fluid reservoir at another end portion, pump means carried at one end of said sleeve, outlet means in said sleeve connecting said pump means with said accumulator, inlet means in said sleeve connecting said pump means with said reservoir, said housing having a partition extending inwardly in slidable but sealing contact with the outer surface of said sleeve, a first annular piston affixed to said sleeve on one side of said partition and forming a first annular cylinder therebetween and between said housing and said sleeve, a second annular piston affixed to said sleeve on the side of said partition opposite said first piston and forming a second annular cylinder therebetween and between said housing and said sleeve, passage means connecting said accumulator and said first annular cylinder, valve means carried by said sleeve, a gear rack slidable on said sleeve for controlling said valve means, second passage means connecting said valve means and said second annular cylinder, third passage means connecting said accumulator and said valve means, and fourth passage means connecting said reservoir and said valve means, said valve means being movable relative to said sleeve to communicate one of said annular cylinders with said accumulator and to communicate the other of said annular cylinders with said reservoir.

4,316,520

UNILATERAL REAR-DRIVE TYPE THREE-WHEELED VEHICLE

Hitoshi Yamamoto, Shiki; Masaki Watanabe, Urawa, and Shinichi Koizumi, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 8, 1980, Ser. No. 120,123

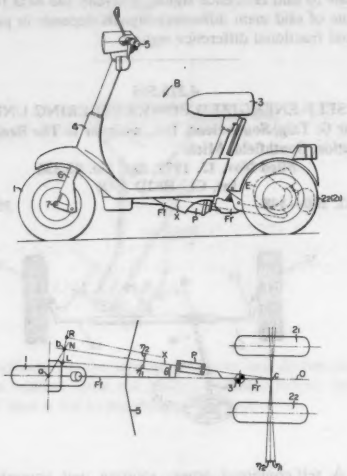
Claims priority, application Japan, Feb. 14, 1979, 54-15874

Int. Cl.³ B62K *5/06*

U.S. Cl. 180—215 **6 Claims**

1. A three-wheeled vehicle of the type including a body comprised of a front frame supporting a single front wheel, a rear frame supporting a pair of right and left rear wheels on a common transverse axis, the front and rear frames being interconnected by means of a pivot joint so that the front frame may tilt to one side or other about the turning axis of the pivot joint, and a power drive unit operatively connected with one of the

rear wheels, wherein the improvement comprises that said front wheel is arranged in the longitudinal plane of symmetry of the vehicle while said rear wheels are arranged symmetrically with respect to said plane, and wherein said pivot joint is



arranged so that the turning axis thereof is generally offset from said plane to that side of the vehicle at which said one rear wheel is arranged and is inclined laterally outwardly from the rear towards the front of the vehicle.

4,316,521

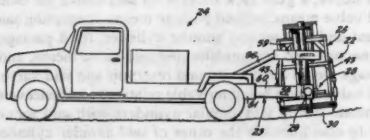
PIVOTED ELEVATOR MOUNTING FOR MOBILE LAND SEISMIC ENERGY SOURCE

Stephen V. Chelminski, West Redding, Conn., assignor to Bolt Associates, Inc., Norwalk, Conn.

Continuation of Ser. No. 871,602, Jan. 23, 1978, abandoned. This application Dec. 7, 1979, Ser. No. 101,123

Int. Cl.³ G01V *1/09*

U.S. Cl. 181—114 **15 Claims**



2. A mobile land seismic energy source for surveying on the earth by transmitting powerful seismic energy impulses down into the earth, said land source comprising:

a seismic energy generating assembly including a seismic energy generator for generating a seismic impulse;

an outer supporting frame adapted for mounting on a land vehicle;

vertical guide means for guiding said generating assembly in vertical movement relative to said outer supporting frame;

said vertical guide means being pivotally mounted to said outer supporting frame for swinging movement about a generally horizontal axis;

said vertical guide means comprising two rigid, linear tubular channel members each having a longitudinal opening therein facing inwardly toward said seismic energy generating assembly,

said seismic energy generating assembly including horizontal extensions which fit into said tubular channel members and are free to move longitudinally along within said channel members,

said horizontal extensions from said generating assembly extending through said longitudinal openings,

said extensions including tough, slippery plastic polymer sleeves at least partially surrounding vertical cylindrical mandrels positioned within and coaxial with said tubular channel members; and

lifting means for lifting said generating assembly relative to said vertical guide means to elevate said seismic energy generating assembly from an operating position in contact with the ground to a raised position above the ground in readiness for transport.

4,316,522

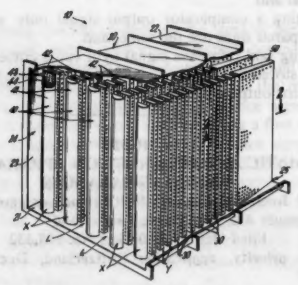
ACOUSTIC FILTER SILENCER

Martin Hirschorn, New York, N.Y., assignor to Industrial Acoustics Company, Inc., Bronx, N.Y.

Filed Nov. 7, 1979, Ser. No. 91,990

Int. Cl.³ E04F *17/04*; F01N *1/10*; F02M *35/12*

U.S. Cl. 181—224 **15 Claims**



1. A sound silencer for insertion in a duct having a fluid medium flowing therethrough comprising:

an outer-housing having an open entry end, an open exit end, a base portion, a roof portion, and a pair of opposed side walls; the main flow of the fluid medium being from the entry end of the housing of the exit end thereof; and

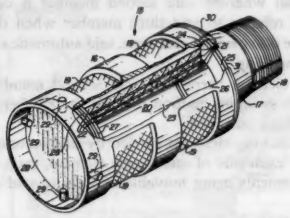
a plurality of spaced apart sound attenuating members disposed within the housing, said sound attenuating members being arranged in columns and rows, each of said sound attenuating members being disposed substantially normal to said housing base and extending from said base to said housing roof such that said sound attenuating members define a first plurality of fluid passageways substantially parallel to the direction of the main flow of the fluid medium and extending from the entry end of the housing to the exit end thereof, and a second plurality of fluid passageways disposed substantially perpendicular to the direction of the main flow of the fluid medium and extending from one of said housing sidewalls to the other sidewall, each of said sound attenuating members having a first pair of opposed faces disposed substantially parallel to said first plurality of fluid passageways and a second pair of acoustically transparent opposed faces disposed substantially parallel to said second plurality of fluid passageways, said attenuating members being substantially filled with a sound absorptive filler material.

4,316,523

SILENCER FOR GAS DISCHARGE DEVICES

Napoleon P. Boretti, 13834 Del Webb Blvd., Sun City, Ariz. 85351

Filed Jun. 4, 1980, Ser. No. 156,479
Int. Cl.[3] F01N 1/10, 1/24, 7/18
U.S. Cl. 181—226 23 Claims



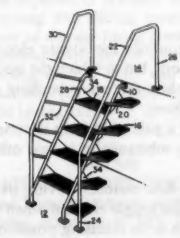
1. An air exhaust silencer comprising:
a housing having an air inlet means at one end of said housing for attachment to an air exhaust and at least one exhaust port, and
a detachably mounted cartridge axially arranged within said housing,
said cartridge comprising a plurality of contiguous layers of wire mesh and resilient porous material arranged sequentially in the path of movement of all of the air flow under pressure through the silencer,
said layers of resilient porous material confined between adjacent layers of wire mesh deflect under pressure surges of the air passing therethrough to substantially prevent premature loading of the porous material and excessive flexing and disintegration thereof.

4,316,524

TWO-SPEED LADDER

James M. Lapeyre, New Orleans, La., assignor to The Laitram Corporation, New Orleans, La.

Filed Jun. 12, 1980, Ser. No. 158,883
The portion of the term of this patent subsequent to Apr. 22, 1997, has been disclaimed.
Int. Cl.[3] E06C 9/02, 7/08
U.S. Cl. 182—93 5 Claims



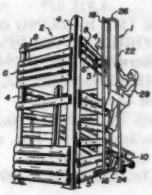
1. A ladder comprising:
a central tread support member adapted for mounting between an upper level and a lower level at a predetermined angle of inclination;
a first plurality of half tread members disposed on one side of said support member and equally spaced along the length thereof;
a second plurality of full tread members disposed along the opposite side of said support member and equally spaced along the length thereof;
said first and second plurality of tread members being disposed in alternating arrangement on respective sides of said support member;
each of said half tread members having a foot support portion outwardly extending from said support member and rail support means outwardly extending from the foot support portion and terminating substantially in a plane forward and parallel to a plane passing through the front edges of the foot support portions;
a first handrail attached to said rail support means and lying in the forward plane; and
a second central tread support member adapted for mounting between said upper and lower levels and affixed to the outer ends of said full tread members.

4,316,525

LADDER FOR PLAY STRUCTURE

Roger D. Gehlbach, White Rock, Canada, assignor to Gehlbach Engineering Ltd., White Rock, Canada

Filed May 5, 1980, Ser. No. 146,812
Int. Cl.[3] E06C 5/36; A63B 9/00
U.S. Cl. 182—106 6 Claims



1. A ladder for a children's play structure, comprising:
a pair of spaced-apart, elongate side members extending from a first end of the ladder to a second end thereof;
a plurality of rungs extending perpendicularly between the side members, adjacent rungs having a distance therebetween, said distance increasing successively between adjacent rungs from the first end of the ladder towards the second end; and
a third elongate member, parallel to the side members and midway therebetween, extending substantially from the first end of the ladder to the second end, the third member being outwardly spaced-apart a substantial distance from the rungs, whereby a child climbing the ladder from the first end towards the second end, having his feet on the rungs and grasping the third member, exercises arm, torso and leg muscles in lifting his body.

4,316,526

APPARATUS FOR AND METHOD OF CLIMBING AN UPRIGHT COLUMNAR MEMBER

Joseph A. Amacker, Tallulah, La., assignor to Amacker, Inc., Tallulah, La.

Continuation-in-part of Ser. No. 873,285, Jan. 30, 1978, abandoned. This application Nov. 17, 1978, Ser. No. 961,640
Int. Cl.[3] A47C 9/10; A01M 31/02
U.S. Cl. 182—135 33 Claims

1. An apparatus for climbing upright columnar members comprising:
first climbing means including first means for gripping an upright member and a first platform means, said first platform means spaced from said upright member, accommodating the body of the user;
second climbing means including second means for gripping the upright member and a second platform means, adjacent to said upright member, for accommodating the feet of the user;
the first climbing means further including first and second bar means for supporting the body of the user from the side;

the first climbing means further including first means for adjusting an angle formed by the first platform means with the first and second support bar means; and

the first angle adjusting means including first telescoping members positioned within side edges of the first platform means.

4,316,527

APPARATUS FOR THE PARKING OF VEHICLES ON MOBILE PLATFORMS

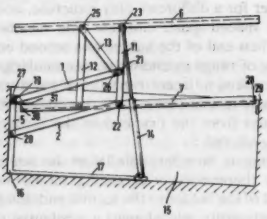
Kaspar Klaus, Dr.-Berndl-Str. 5, D-8940 Memmingen, and Franz Treppesch, Herbisrieder-Str. 2a, D-8944 Grönenbach, both of Fed. Rep. of Germany

Filed Sep. 18, 1979, Ser. No. 76,790

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1978, 2842700; Aug. 4, 1979, 2931713

Int. Cl.³ B60S *13/00*

U.S. Cl. 187—8.71 **9 Claims**



1. In apparatus for the multitier packing of vehicles, comprising at least two vehicle-receiver platforms, equipment to mount the platforms in superposed relationship and to raise the platforms simultaneously in a substantially vertical direction in this condition to bring a selected platform into communication with a stationary vehicle-access area, the improvement in which said equipment comprises at least one parallelogram linkage arranged in a superposed spaced relation and which extends substantially horizontally when collapsed, said at least one parallelogram linkage being attached at one end to a fixed substantially vertical support forming part of said linkage by means solely for pivotal mounting, said pivotal mounting means being vertically disposed and, said at least one parallelogram linkage being attached at its other end to strut means connecting said platforms by pivotal connecting means, said pivotal connecting means being vertically disposed.

4,316,528

MECHANISM FOR LATCHINGLY CONNECTING TELESCOPING MEMBERS

Max J. Dechantsreiter, Milwaukee, Wis., assignor to Harnischfeger Corporation, West Milwaukee, Wis.

Filed Mar. 11, 1980, Ser. No. 129,196

Int. Cl.³ B66C *19/00*

U.S. Cl. 187—9 E **11 Claims**

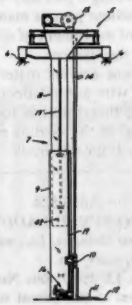
1. In apparatus having first and second members which are movable in a pair of opposite directions relative to one another and to a third member, said first member having a range of motion in said directions that extends to opposite sides of a medial zone, and said second member being biased in the direction towards one side of said zone, automatic connection means whereby said second member is constrained to move with said first member when the latter is at said one side of said medial zone and whereby said second member is confined against motion relative to said third member when the first member is at the other side of said zone, said automatic connection means comprising:

A. a toggle element carried by said second member and confined to swinging motion relative thereto between a pair of locking positions;

B. a pair of latching elements carried by said second member, one at each side of said toggle element, each of said latching elements being movable relative to said second member

(1) substantially in said one direction to a releasing position and

(2) substantially in the other of said directions to a latching position towards which the latching element is biased,



at which it confines the toggle element in one of its locking positions, but to which the latching element can move only when the other latching element is in its releasing position;

C. means defining a pair of locking abutments, each having a surface facing substantially in said other of said directions,

(1) one on said first member having its said surface engageable by said toggle element when one of said latching elements is in its releasing position, and

(2) the other on said third member having its said surface engageable by said toggle element when the other of said latching elements is in its releasing position;

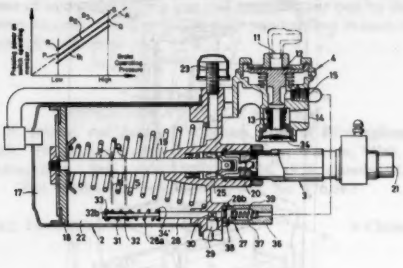
D. cooperating displacement abutments on the first member and on said one latching element whereby the latter is displaced to its releasing position by movement of said first member through said zone in said one direction; and

E. other cooperating displacement abutments on the third member and on said other latching element whereby the latter is displaced to its releasing position by movement of the second member through said zone in said other direction.

4,316,529
BRAKE BOOSTER

Ichiro Yanagawa, Higashimatsuyama; Tokio Kurita, and Kei Nakasu, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed May 2, 1980, Ser. No. 146,088
Claims priority, application Japan, May 23, 1979, 54/63462
Int. Cl.³ F16D *63/00*; B60T *17/22*
U.S. Cl. 188—1.11 4 Claims



1. In a brake booster having a power cylinder which receives pressure fluid and a hydraulic cylinder actuable by the power cylinder when it receives pressure fluid, in combination and having a wear detector for detecting the wear of a brake lining when it has reached a predetermined level, the wear detector comprising:

a switch operating member (**28**) so arranged as to be moved by means of a power piston (**18**) disposed in the power cylinder and provided with a spring (**31**) at one end;

a switch (**29**) adapted to be actuated due to the movement of said switch operating member; and

means for exerting a pressure corresponding to the operating pressure of the power piston onto an other end (**28***b*) of said switch operating member;

said switch operating member (**28**) being so constituted as to be pressed and moved by the power piston through said spring (**31**);

said pressure exerting means having a pressure chamber (**37**) arranged to face said other end of said switch operating member, a pressure-receiving and sliding member (**38**) disposed in said pressure chamber and provided at said other end of said switch operating member, and means for connecting said pressure chamber to a portion of the power piston exposed to pressure fluid, the area of said pressure-receiving and sliding member being such that when the wear of a brake lining remains slightly less than the predetermined level, power from said pressure exerting means acting on said other end (**28***b*) of said switch operating member (**28**) becomes equal to the pressing power of said spring (**31**).

4,316,530
FLOATING CALIPER DISC BRAKE

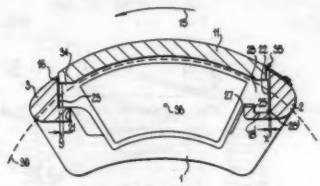
Jakob Gehlen, and Hans Wortmann, both of Bad Soden, Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Continuation of Ser. No. 67,572, Aug. 17, 1979, abandoned. This application Jan. 19, 1981, Ser. No. 226,310
Claims priority, application Fed. Rep. of Germany, Sep. 7, 1978, 2838921
Int. Cl.³ F16D *55/224*, *65/02*
U.S. Cl. 188—73.39 11 Claims

1. A floating caliper disc brake comprising:

a brake disc having a main direction of rotation about a rotational axis such that said disc enters said brake on an entry side thereof and leaves said brake on an exit side thereof;

a brake support member disposed on one side of said disc, said support member having a first arm disposed on said entry side embracing the periphery of said disc and a second arm disposed on said exit side embracing the periphery of said disc, said first arm including at least a first groove disposed adjacent a selected side of said disc extending parallel to said axis formed by a first surface extending vertically parallel to said axis, a second surface disposed on said selected side of said disc perpendicular to said first surface extending from said first surface toward the center of said disc and a third surface disposed on said selected side of said disc perpendicular to said second surface extending from said second surface, spaced from and facing said first surface and extending parallel to said first surface and said second arm including a fourth surface disposed on said selected side of said disc extending vertically parallel to and facing said first surface and a fifth surface disposed on said selected side of said disc perpendicular to said fourth surface extending from said fourth surface toward the center of said disc;



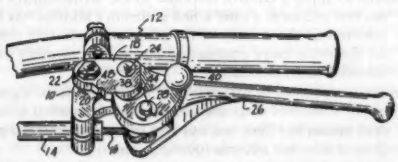
a brake caliper carried and guided on said support member and embracing the periphery of said disc, said caliper being in a positive direct engagement with said second arm and spaced from said first surface in an inoperative position of said brake; and

a pair of brake shoes each disposed on opposite sides of said disc, at least one of said pair of shoes having a first friction lining on the surface thereof remote from said disc to frictionally engage said caliper and said one of said pair of shoes is disposed on said selected side of said disc having an inwardly directed first projection on an end thereof adjacent said first arm engaging said first groove in an abutting relationship with said third surface and spaced from said first surface a first predetermined distance and the other end of said one of said pair of shoes being in an abutting relationship with said fifth surface and spaced from said fourth surface a second predetermined distance in said inoperative position of said brake.

4,316,531
CLUTCH LOCKOUT LATCH

Anthony B. Harpster, 16577 State Rd., North Royalton, Ohio 44133

Filed Aug. 18, 1976, Ser. No. 715,548
Int. Cl.³ F16D *23/12*
U.S. Cl. 192—114 R 2 Claims



1. A clutch control latchable in selected degrees of clutch engagement and mounted on a motorcycle handle bar having a handgrip, said clutch control being operably connected to the motorcycle clutch and independent of said handgrip, said

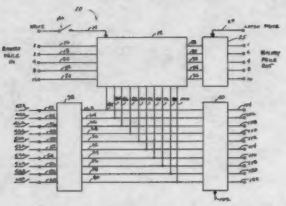
latchable control comprising a body clamped to said handle bar adjacent said handgrip, an arcuate rack rigidly affixed to said body, a clutch control lever pivoted in said body and operably connected to the motorcycle clutch, and a detent pivotally mounted on said lever, said detent having a tongue engagable with said arcuate rack and having an arm with a rounded end opposite to said tongue, said rounded end being adjacent the end of the handgrip proximate to the control lever pivot, said detent being engagable with said rack for releasably holding said clutch lever at one end of its path of travel.

4,316,532

VERSATILE PRICING MEANS

Joseph L. Levasseur, Chesterfield, Mo., assignor to H. R. Electronics Company, High Ridge, Mo.

Filed Sep. 13, 1979, Ser. No. 75,015
Int. Cl.³ G07F *11/00*
U.S. Cl. 194—1 N **21 Claims**



1. A price control circuit for vending and like devices having actuatable vend selection means, credit entry means, vend delivery means for delivering vend selections, each vend selection having vend delivery means associated therewith, and means for generating a price retrieval signal and for producing a vend initiation signal when the amount of credit entered at least equals the price of a selected vend, comprising

a read-write memory having a plurality of address locations where price information can be stored for later readout,

control means for the memory including price entry connection means, price readout connection means, write control connection means, readout control connection means, and a plurality of memory address control connections operatively connected to respective ones of the address locations,

means for producing price information in binary form for entry into the memory, said means being operatively connected to the price entry connection means,

means, including addressing signal outputs, responsive to actuations of the vend selection means for producing addressing information at said addressing signal outputs, the addressing signal outputs being connected to the memory address control connections for establishing a particular address location in the memory for respective entry thereinto or readout therefrom of price information,

means to apply a control response to the write control connection means at a time when a memory address has been selected to effect entry of the pricing information present on the price entry connection means into memory at the selected address location,

means responsive to generation of a price retrieval signal to apply a control response to the readout control connection means to effect readout of a previously entered price from a selected address location, and

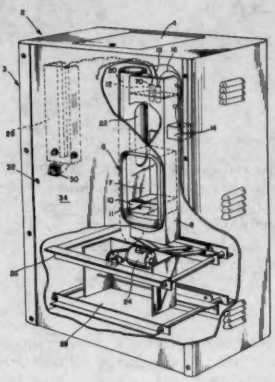
means, including first input means operatively connected to the addressing signal outputs and second input means operatively connected to receive the vend initiation signals, responsive to vend initiation signals to effect operation of the vend delivery means associated with the vend selection that has been selected.

4,316,533

CONTAINER DEPOSIT REFUND SYSTEM

Robert D. Hughes, and James Brazell, both of Atlanta, Ga., assignors to The Coca-Cola Company, Altanta, Ga.

Filed Mar. 4, 1980, Ser. No. 127,036
Int. Cl.³ G07F *7/06*
U.S. Cl. 194—4 C **12 Claims**



1. An automatic refund device for refunding the deposit on deposit containers determined to be authentic, said containers having an identification means mounted thereon, comprising:

a housing containing an opening for receiving said containers therein;

detection means for detecting the authenticity of said containers by recognition of said identification means and for generating a refund signal in response thereto;

elevator means for moving said container from a first position adjacent said opening in said housing to a second position in close proximity to said detection means, said elevator means being selectively movable from the first to the second position;

container transport means for transferring said container from said elevator means for storage;

ejector means for moving said container from said elevator means to said container transport means in response to the refund signal from said detector means; and

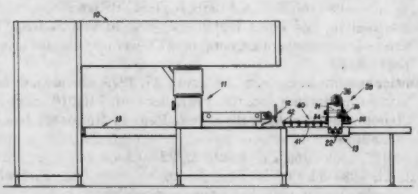
deposit refund means for returning the deposit in response to the refund signal from said detector means.

4,316,534

PAN INDEXING APPARATUS

Donald L. Cummins, Hopewell, Va., assignor to AMF Incorporated, White Plains, N.Y.

Filed Jun. 24, 1980, Ser. No. 162,548
Int. Cl.³ B65G *37/00*
U.S. Cl. 198—345 **9 Claims**



1. Indexing apparatus for baking pans on an endless belt type conveyor, comprising

frame means adapted to be mounted on the frame of the conveyor;

carrier means movably mounted on said frame means;

a cantilevered template connected at one end to said carrier means and extending therefrom longitudinally along the conveyor;

said template being disposed parallel to and spaced above the conveyor, and having an equally spaced series of tangs extending downwardly toward the conveyor sequentially engaging pans thereon; and

means for momentarily moving said carrier means and template upwardly from the conveyor thereby disengaging one of said tangs from a pan and engaging the pan by the next successive tang permitting the pan to move in successive discrete steps.

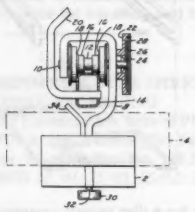
4,316,535
WORKPIECE STORAGE SYSTEM

John H. Brems, and James T. Graham, both of Birmingham, Mich., assignors to F. Jos. Lamb Company, Warren, Mich.

Continuation of Ser. No. 908,941, May 24, 1978, abandoned. This application Aug. 8, 1980, Ser. No. 176,562

Int. Cl.³ B65G *37/00*

U.S. Cl. 198—473 **5 Claims**



1. In a series of automatic workpiece processing equipment, including individual machines, transfer machines, or individual sections of transfer machines which sequentially operate on a workpiece, thereby constituting a processing line, a gravity actuated workpiece transfer and storage system, comprising:

A. track means forming a topologically closed loop comprising a first track means having track surfaces which slope downwardly in a given topologial direction around said loop,

B. a plurality of workpiece holding pallets, each of which comprises:

1. a body adapted for supporting and holding one or more workpieces which is appropriate to said workpiece size,

2. two unpowered primary wheels of different diameters mounted on said pallet body for selectively supporting and guiding said pallet body on and with respect to said first track means,

3. retarding means acting between said pallet body and each of said primary wheels to generate a retarding torque substantially proportional to the angular velocity of said first primary wheel,

C. lifting means positioned between segments of said track means and within said topological closed loop, and adapted to raise said pallet bodies sequentially from a lower level segment of said track means to a higher level segment of said track means,

D. means for loading and unloading workpieces to and from said pallet bodies comprising a pallet body loading mechanism forming a first division which divides said track means into two portions: a first portion for carrying empty pallet bodies and a second portion for carrying pallet bodies loaded with workpieces, and a pallet body unloading mechanism which forms a second division between said second portion and said first portion of said track means, and

E. said first and second portions of said track means being spatially related relative to said primary wheels to cause the smaller diameter primary wheel to ride on said second portion of said track means when a pallet body is loaded with a workpiece, and to cause the larger diameter primary wheel to ride on said first portion of said track when a pallet body is not loaded with a workpiece, thereby creating a different ratio of retarding force to pallet body velocity for a pallet body supported on one of said primary wheels than the ratio of retarding force to pallet body velocity for a pallet body supported on the other of said primary wheels.

4,316,536
CONVEYOR BELT

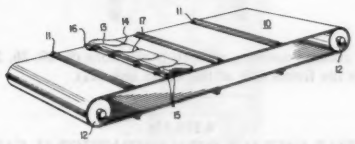
John M. Verbeek, Belwood, Canada, assignor to Agri-Canvas Inc., Ontario, Canada

Filed Mar. 17, 1980, Ser. No. 131,178

Claims priority, application Canada, Dec. 12, 1979, 341744

Int. Cl.³ B65G *15/44*

U.S. Cl. 198—699 **5 Claims**



1. A conveyor belt comprising a web woven from an extruded nylon cord and having a polyvinyl chloride coating with a plurality of transverse, spaced, vinyl slats heat sealed thereto, the vinyl slats comprising an inner core of rigid vinyl and an outer main body of less rigid vinyl, the rigid core having a T-shaped cross-section and the outer main body having an inverted T-shaped cross-section with a slot of corresponding shape to the inner rigid core for receiving same, the inner core being secured to the outer main body with a polyvinyl chloride solvent.

4,316,537
CHAIN CONVEYOR

Werner Rieger, Hau Häselbach, and Horst A. Elsässer, Sauerbruch 15, both of 7084 Aalen-Unterkochen, Fed. Rep. of Germany

Filed Jun. 13, 1980, Ser. No. 159,199

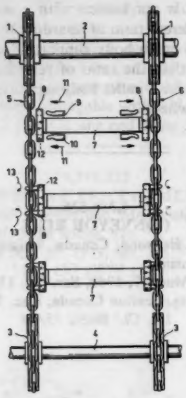
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1979, 2925045

Int. Cl.³ B65G *19/24, 19/00*

U.S. Cl. 198—731 **15 Claims**

1. A chain conveyor having at least two chain strands, formed from oval chain links and running over sprockets, and conveyor elements which are connected to the chain strands via pairs of projections which engage in the free inner space between two successive chain links oriented perpendicular to the sprocket axis, the shortest distance a_{min} between the free ends of the projections of each pair of projections in the operating position being smaller than the length L of the particular chain link gripped by the projection in the manner of a fork, and one of the projections having an arcuate outline on the side facing the front of this chain link, wherein the second projection (**10**; **27**) also has an arcuate outline on one side and at least one of the projections (**9**, **10**; **26**, **27**; **37**, **38**) of each pair of projections is pivotably mounted on the conveyor element (**7**) in such a way that it can be transferred from an assembly position, in which its side with the arcuate outline faces away from the front (**20**) of the chain link (**21**) gripped by the projec-

tions (9, 10; 26, 27; 37, 38) and the distance a_{min} is greater than the length L, into the operating position in which the sides,



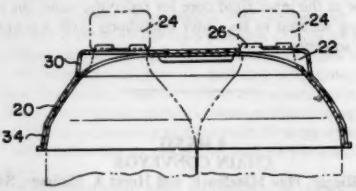
having arcuate outlines, of both projections (9, 10; 26, 27; 37, 38) face the fronts (20) of this chain link (21).

4,316,538

BOTTLE PACKAGE WITH PROMOTIONAL CARD INSERT

Guelfo A. Manizza, Blauvelt, N.Y., assignor to Federal Paper Board Company, Inc., Montvale, N.J.

Filed Sep. 8, 1980, Ser. No. 184,639
Int. Cl.³ B65D *77/24, 85/62, 75/54*
U.S. Cl. 206—216 **6 Claims**



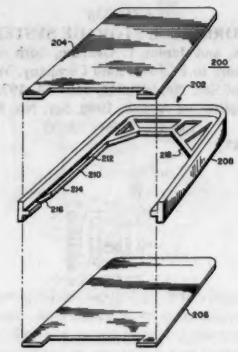
1. An article package comprising a group of articles having the general form of short neck bottles with cap type closures, which articles are arranged in double row transversely paired relation and held in group arrangement by a top gripping shroud formed of a continuous plastic which is at least semi-transparent and which is shaped or otherwise formed so as to provide a top wall forming panel and a depending sidewall formation extending about the perimeter of the top wall forming panel, said top wall forming panel having apertures therein which are in row relation, and spaced according to the spacing of the articles so as to fit down over the necks of the articles with portions of the edges of the apertures engaging beneath depending skirt forming portions of the cap closures, said sidewall formation extending in the form of a band about top portions of the articles and having a depth which extends below at least to the bottom of the neck forming portions of the articles with a peripherial dimension which results in tightly gripping outboard portions of the surfaces of the corner articles in the group, and a promotional display card of bendable sheet material trapped between the shroud and the top portions of the articles, which display card has a center panel with spaced apertures adapted to accommodate the neck portions of the middle row of articles and panel formations at opposite ends of the center panel which extend approximately to the bottom edges of the side wall formation and which lie in close proximity to the inner face of the sidewall formation so that display material on the surface is visible through the shroud material.

4,316,539

VIDEO DISC CADDY

Leslie A. Torrington, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 10, 1980, Ser. No. 214,854
Int. Cl.³ B65D *85/57;* **G11B** *5/82, 25/04*
U.S. Cl. 206—307 **10 Claims**



1. A package for a disc record comprising:

(A) a substantially U-shaped frame made from relatively rigid material; said U-shaped frame having an edge wall and an intermediate flange extending inwardly from said edge wall; said flange being disposed generally perpendicularly to said edge wall; the interior surfaces of said edge wall in cooperation with said intermediate flange defining a plurality of channels; and

(B) a pair of panels made from sheet material; each of said panels being securely mounted in the respective ones of said channels in said frame; the interior surfaces of said intermediate flange and said panels forming a record enclosing cavity.

4,316,540

NESTING OR STACKING BOX

Sidney D. Lapham, 2324-3 Tice Creek Dr., Walnut Creek, Calif. 94595

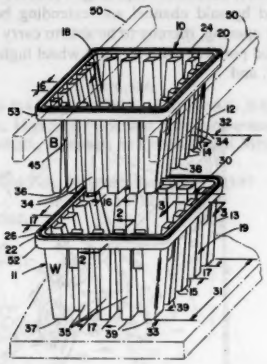
Filed May 31, 1979, Ser. No. 44,086
Int. Cl.³ B65D *21/04*
U.S. Cl. 206—507 **16 Claims**

1. A substantially square tote box having an open top, a bottom and substantially identical side walls, said tote box being adapted to nest or stack with a similar tote box,

each side wall of said box being formed of similar individual corrugations, each of said corrugations having spatial amplitudes and spacial wave lengths that are small relative to the length, and large relative to the thickness, of said side wall, with the train of individual corrugations forming each of said side walls being identical with the train of the other three sides of said box in number of corrugations and spacing of said corrugations from the edge of the side wall when considered in relation to movement in a clockwise direction around the periphery of the box, and each of said corrugations being tapered inwardly from said open top toward said bottom, and

a lip member surrounding said open top forming a landing surface surrounding the periphery of each of said corruga-

tions and thereby enveloping the outer extremities of all said individual corrugations in said landing surface, and



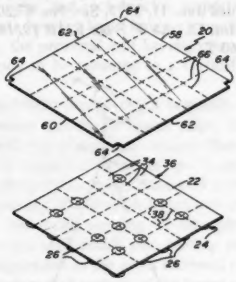
said lip being external to said corrugations to form a bottom lift or grip surface for handling said box.

4,316,541

MOISTURE IMPERVIOUS COVER SHEET FOR UNIT DOSE PACKAGING

Milton Braverman, and Leonard Zink, both of Philadelphia, PA, assignors to Medi-Dose, Inc., Feasterville, Pa.

Filed Mar. 31, 1980, Ser. No. 135,562
Int. Cl.³ B65D *83/04, 75/42, 85/56, 75/32*
U.S. Cl. 206—532 **15 Claims**



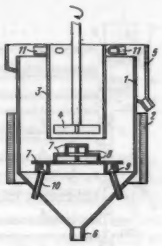
1. A moisture impervious barrier sheet for use on a multi-compartment medicinal dispensing device having a base, said base including a plurality of medicine-holding chambers releasably secured to each other along weakened lines and to which a cover sheet is secured, said cover sheet including plural closures, one for each of said chambers and releasably secured to one another along weakened lines corresponding to the weakened lines of said base, said barrier comprising a sheet formed of a moisture impervious material and having a central portion, a top edge portion, a bottom edge portion and an opposed pair of side edge portions, said central portion and edge portions each including an inner surface having an adhesive thereon, each of said edge portions being in the form of an elongated foldable flap, said central portion corresponding in size with the cover sheet of said dispensing device and including weakened lines corresponding to the weakened lines of the cover sheet, said barrier sheet being securable to said cover sheet by disposing the barrier sheet on the cover sheet so that said adhesive contacts the cover sheet permanently securing the barrier sheet to the cover sheet and with the weakened lines of the barrier sheet being coincident with the weakened lines of the cover sheet and with said flaps being folded around the edges of said cover sheet and into engagement with said base to render the cover sheet and the interface between it and said base impervious to the ingress of moisture into said device.

4,316,542

ELECTROMAGNETIC SEPARATOR

Petr I. Zelenov, Leningradsky prospekt, 7, kv. 253, Olenegorsk Murmanskoi oblasti; Petr A. Usachev, ulitsa Fersmana, 20, kv. 54; Jury V. Davydov, ulitsa Zinovieva, 8, kv. 13, both of Apatity Murmanskoi oblasti; Vyacheslav P. Lyakhov, 3 mikroraion, 2, kv. 56; Irina M. Zelenova, Leningradsky prospekt, 7, kv. 253, both of Olenegorsk Murmanskoi oblasti; Nikolai A. Aleinikov, ulitsa Fersmana, 16, kv. 21, Apatity Murmanskoi oblasti; Vladlen F. Sladkovich, ulitsa Komsomola, 6, kv. 4, and Viktor I. Titov, ulitsa Mira, 8, kv. 9, both of Olenegorsk Murmanskoi oblasti, all of U.S.S.R.

Filed Jul. 15, 1980, Ser. No. 169,214
Int. Cl.³ B03C *1/30*
U.S. Cl. 209—39 **8 Claims**



1. An electromagnetic separator comprising:

a cylindrical housing with a conical bottom, said housing having a top part and a bottom part;

a circular electromagnetic system installed on the outside of said housing and embracing a part thereof;

a cylindrical pulp feeding device installed inside said housing coaxially therewith, said device having a top part and a bottom part;

a non-magnetic product discharging device located in said top part of said housing;

a magnetic product discharge branch located in said bottom part of said housing;

a system of disks spaced apart and rigidly installed one under the other in said bottom part of said housing coaxially therewith, directly underneath said pulp feeding device, said system comprising the top, the second and all the subsequent disks, including the bottom one; center holes in said second and all the subsequent disks, including the bottom one, the diameters of said holes decreasing from said bottom disk to said second disk, said holes being smaller than the diameter of the next upper disk, the diameters of said disks increasing from said top disk to said bottom disk, the diameters of said top and bottom disks being respectively smaller and larger than the diameter of said pulp feeding device;

a wash water feeding device located underneath said bottom disk coaxially therewith and constructed in the form of a circular element including means for distributing the wash water between said system of disks and said separator housing;

directional feeding means designed for feeding wash water in a predetermined direction and installed tangentially on said circular element;

a paddle agitator of said cylindrical pulp feeding device, said paddle agitator being installed inside said pulp feeding device in said bottom part thereof directly over said system of disks, coaxially therewith, the paddles of said agita-

tor being designed to rotate in the direction coinciding with the direction of wash water feed; and

tangential means installed in said top part of said pulp feeding device for the purpose of feeding pulp in the direction coinciding with the direction of wash water feed and with that of rotation of said agitator paddles;

said system of disks, wash water feeding device and agitator located in said part of the housing embraced by said circular electromagnetic system for the purpose of creating the required magneto hydrodynamic conditions of pulp flow.

4,316,543

SIEVING ROLLER CONVEYOR FOR GREEN PELLETS

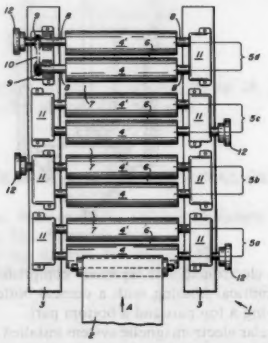
Alexander Leonhardt, Bonn, Fed. Rep. of Germany, assignor to Dravo Corporation, Pittsburgh, Pa.

Filed May 19, 1980, Ser. No. 150,898

Claims priority, application Fed. Rep. of Germany, May 31, 1979, 2922174

Int. Cl.³ B07B *13/05*

U.S. Cl. 209—673 **8 Claims**



1. In a sieving roller conveyor for conveying green pellets and for sieving off fines having a series of horizontal rollers which are spaced apart so that the clearance between adjacent rollers is smaller than the smallest diameter of the pellets to be carried and sieving clearances are defined between certain adjacent rollers, the rollers extending transversely to the direction in which the pellets are to be conveyed and being rotatably connected in a frame provided with means for driving the rollers in the direction in which the pellets are to be conveyed, the improvement wherein:

a portion of said series of rollers are spaced so as to provide sieving clearance, and

a further portion of said series are spaced so as to provide cleaning clearance, said cleaning clearance being smaller than said sieving clearance.

4,316,544

INCLINED BICYCLE STORAGE RACK EMPLOYING CHANNEL WITH MIDPOINT FRAME SHACKLE

Irv Goldstein, 2049 Brown Ave., #B-4, Cornwells Heights, Pa. 19020

Filed Feb. 25, 1980, Ser. No. 124,284

Int. Cl.³ E05B *73/00*

U.S. Cl. 211—5 **9 Claims**

1. A bicycle rack comprising:

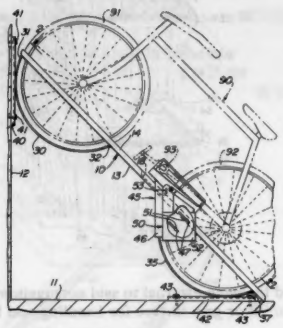
a framework having an elongated channel member, the front end of said channel member being elevated with respect to its rear end,

a front portion of said channel member having an opening therein for receiving a bicycle's front wheel,

a front wheel receiver comprising a concave wheel support carried by said channel and extending below said opening,

a rear portion of said channel member being at an elevation lower than said front portion and having an opening therein for receiving a bicycle's rear wheel,

a rear wheel receiver comprising a concave wheel support carried by said channel and extending below said rear wheel opening, thereby to be able to carry a bicycle in an inclined position, with its front wheel higher than its rear wheel, and



shackle means on said channel member between said front and rear portions thereof for movement into and out of retaining and locking engagement with a bicycle, when carried by said rack, at a frame portion of said bicycle between the wheels thereof.

4,316,545

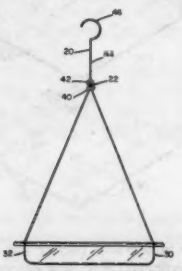
HANGING TOOL TRAY

Dale A. Hartnell, 410 E. Eighth St., Centralia, Ill. 62801

Filed Jun. 11, 1979, Ser. No. 47,204

Int. Cl.³ A47F *7/00*; E21B *19/14*

U.S. Cl. 211—60 T **1 Claim**



1. A hanging tool tray comprised of a flat rectangular tray base having four sides connected to four shallow vertical walls and means for suspending the tray from a support, said means comprising flexible and axially yieldable suspension cable-like members connected to each of the corners of said tray, means connecting said members together below a loop formed in said cables and hook means connecting said loop through an elongated shank to an open hook member adapted to be connected to a support for supporting said tray therefrom, the four walls of said tray being provided with outwardly extending flanges and said flanges being provided with a plurality of openings receiving tools therein, said cable-like members and means connecting said members comprising a pair of cables, each of said cables being connected to a separate corner of said tray and being gathered at two separate points by a constricting member adjacent a middle portion of said cables to define an intermediate loop which is passed through an eye of said hook member to provide for free pivoting movement with respect to

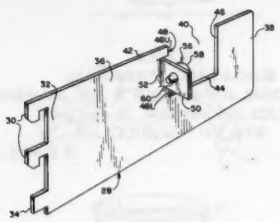
said hook, the constricting member being a collar which connects the cables together to form said loop.

4,316,546

HANG RAIL SUPPORT AND HANG RAIL

David S. Varon, Highland Park, and Irving Silverman, Lincolnwood, both of Ill., assignors to Crown Metal Mfg. Co., Chicago, Ill.

Filed Feb. 20, 1980, Ser. No. 123,110
Int. Cl.[3] A47H *1/02*
U.S. Cl. 211—105.1 23 Claims



1. A support assembly for merchandise and including a rectangular cross section hang rail or bar extending between and supported by spaced apart brackets, said hang rail or bar being subject to rotational force during use thereof and said support assembly serving to resist said force, said assembly including the hang rail or bar in combination with said brackets for supporting same, and each bracket comprising:

A. an elongate bracket body having a proximal end and a distal end, the proximal end having means to enable the bracket body to be mounted to a vertical support structure,

B. said bracket body comprising a vertically arranged sheet metal member having an upper edge, the sheet metal member defining generally a vertical plane,

C. a vertically extending notch formed in said bracket body spaced rearwardly from the distal end thereof, said notch having front and rear support edges and a bottom support edge and the notch opening to the upper edge of the bracket body, said notch also having substantially the same configuration as the cross sectional configuration of at least a substantial portion of the lower part of the hang rail or bar if not all of the cross sectional configuration of the bottom and side faces of said hang rail or bar,

D. a vertically disposed tab integrally connected at one of said front and rear support edges by means of a bend and extending generally at a right angle to the said plane of said bracket body, said tab being formed of at least a portion of the metal removed to provide said notch, the surface of said tab facing the notch being spaced slightly from the said one of said front and rear support edges at which it is connected and outside of said notch,

E. a bumper member of yieldable material mounted on the said surface of the tab facing the notch and having a thickness which is greater than the spacing of the said surface from the support edge at which said tab is connected whereby the bumper member interferes with the hang rail or bar when the same is pressed into the notch thereby frictionally resisting removal of the hang rail or bar and endwise movement thereof, and

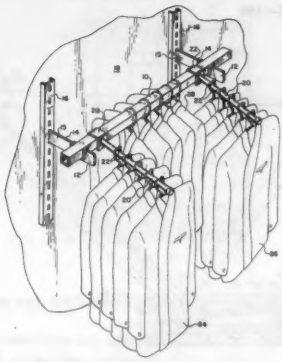
F. the hang rail or bar adapted to be engaged into the notch with its lower face resting on the bottom support edge and its side faces substantially juxtaposed closely to the respective front and rear support edges if not engaging the same.

4,316,547

HANG RAIL SUPPORT AND HANG RAIL

David S. Varon, Highland Park, Ill., assignor to Crown Metal Manufacturing Co., Chicago, Ill.

Filed Mar. 14, 1980, Ser. No. 130,572
Int. Cl.[3] A47H *1/02*
U.S. Cl. 211—105.1 7 Claims



1. A support assembly for merchandise and including a rectangular cross section hang rail or bar extending between and supported by spaced apart brackets, said hang rail or bar being subject to rotational force during use thereof and said support assembly serving to resist said force, said assembly including the hang rail or bar in combination with said brackets for supporting same, and each bracket comprising:

A. an elongate bracket body having a proximal end and a distal end, the proximal end having means to enable the bracket body to be mounted to a vertical support structure,

B. said bracket body comprising a vertically arranged sheet metal member having an upper edge, the sheet member defining generally a vertical plane,

C. a vertically extending notch formed in said bracket body spaced rearwardly from the distal end thereof, said notch having front and rear support edges and a bottom support edge and the notch opening to the upper edge of the bracket body, said notch also having substantially the same configuration as the cross sectional configuration of at least a substantial portion of the lower part of the hang rail or bar if not all of the cross sectional configuration of the bottom and side faces of said hang rail or bar but being somewhat larger than the hang rail or bar,

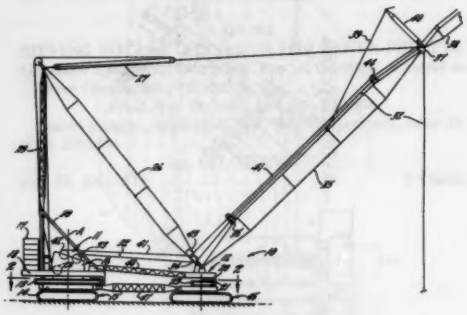
D. an integral U-shaped liner member of firm but somewhat yieldable material engaged in the notch and having a pair of side arms engaged respectively to the front and rear support edges of the notch and a bottom connecting part engaged to the bottom support edge, the liner member presenting an upwardly opening throat formed of the interior surfaces of said side arms and bottom connecting part, the distance between said interior surfaces of said side arms being slightly less than the width of said hang rail or bar whereby there is interference with the hang rail or bar when the same is pressed into said throat thereby resisting frictional removal of the hang rail or bar and endwise movement thereof, each of said liner member side arms having a vertical groove in its exterior surface along the length of side arm and said front and rear support edges being respectively engaged in said grooves whereby to lock the liner member into said notch and

E. the hang rail or bar engaged into said throat with its lower face resting on the interior surface of the bottom connecting part and its side faces frictionally engaging said interior surfaces of said side arms.

4,316,548
CONCENTRIC RING SEGMENT SUPPORTED LIFT CRANE

Percy R. Helm, and James G. Morrow, Sr., both of Manitowoc, Wis., assignors to The Manitowoc Company, Inc., Manitowoc, Wis.

Filed Mar. 7, 1980, Ser. No. 128,248
Int. Cl.³ B66C 23/76
U.S. Cl. 212—196 5 Claims



1. A lift crane having a forwardly inclined boom and a rearwardly inclined mast, said boom and mast being pivotally mounted on a boom carrier mechanism, rigging means interconnecting the tip of the mast and the tip of the boom, counterweight means supported by rollers on a rear ring segment for rotation about a vertical axis, means interconnecting said counterweight and the top of said mast, said boom carrier supported by rollers on a front ring segment for at least partial circumferential rotation about said vertical axis, said front and rear ring segments each mounted on a mobile support mechanism and means interconnecting said front and rear support mechanisms to permit movement of said crane as a unit.

4,316,549
RAILWAY CAR COUPLER

Richard F. Klimowicz, W. Seneca, N.Y., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Apr. 11, 1980, Ser. No. 139,491
Int. Cl.³ B61G 3/08
U.S. Cl. 213—127 3 Claims

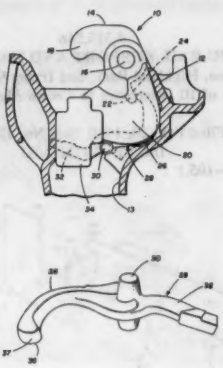
1. A railway car coupler comprising:

a head having a lock receiving chamber;

a knuckle, including a knuckle pad extending from a main body of the knuckle and having a generally concave surface joining the pad to said main body, pivoted to said head and having a closed position and an open position;

a lock in said chamber for locking said knuckle in said closed position; and

a pivotable knuckle thrower having first and second outwardly extending legs, said thrower being positioned within said head, said lock being movable out of locking position to engage a first of said legs to pivot said thrower to effect opening of said knuckle, the second of said legs being in engagement with the knuckle and including surface means being configured to effectively shorten the distance from the thrower pivot to the point of engagement between said second thrower leg and said knuckle pad and lengthen the distance between said point of engagement and said knuckle pivot and limit shortening of the effective length of the moment arm generated by said second leg for rotating the knuckle during the knuckle opening movement, the surface means of said second leg

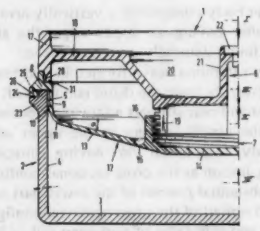


remaining in spaced relation relative to said concave surface during the entire knuckle opening movement.

4,316,550
CANISTER CLOSURE

Koen M. M. de Winter, Lochem, Netherlands, assignor to Mepalservice B.V., Lochem, Netherlands

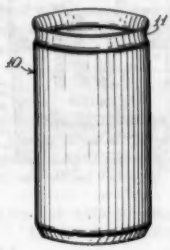
Filed Jul. 5, 1979, Ser. No. 54,893
Int. Cl.³ B65D 39/12, 39/16
U.S. Cl. 215—360 3 Claims



1. In combination, a canister and an appurtenant closure, said canister having a closed bottom, a cylindrical sidewall and a canister opening or mouth at the upper end thereof having a rim, the canister sidewall being provided adjacent to its upper end with a radially outwardly extending flange, and said canister closure being of two-piece construction comprising a bottom portion and top portion, said bottom portion having a radially outwardly extending peripheral flange provided on its radially outer side with a depending portion having at least one recess, and said rim of said canister having a complementary marginal recess for receiving said depending portion, said marginal recess having a fitting dog for engaging said recess on said depending portion, a radially expandable peripheral skirt depending from said radially outwardly extending peripheral flange, and a transverse wall flexibly connected to said radially expandable peripheral skirt, said transverse wall comprising a substantially rigid, conically-shaped intermediate ring panel extending inwardly and downwardly inclined from said skirt, and a rigid, substantially flat, central panel hinged to said intermediate ring panel through local material reduction, an

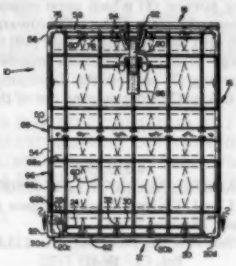
internally threaded tubular stub arranged on the upper side of said central panel, the top portion having a peripheral rim and a cover wall provided centrally on its bottom surface with an externally threaded tubular stub, the portions being arranged to allow the stub carried by the top portion to be screwed into the stub on the bottom portion with the peripheral rim of the top portion resting on the peripheral flange of the bottom portion, thereby to cause the central panel of the bottom portion to be pulled towards the top portion, thereby to decrease the slope of the intermediate panel from its initial angle to a smaller angle measured from the central panel and thereby to increase the outer diameter of the skirt of the bottom portion and, when placed in the canister opening or mouth, the closure is thereby clamped against the canister sidewall.

4,316,551
ALUMINUM CONTAINER
Paul Belokin, Jr., Rte. 4, Hayward, Wis. 54843
Filed Feb. 25, 1980, Ser. No. 123,989
Int. Cl.³ B65D *1/40, 8/04*
U.S. Cl. 220—1 R **19 Claims**



1. A metal container adapted to be axially collapsed in a predetermined pattern when exhausted of its contents, comprising: an endless peripheral sidewall of thin metal material affording a lateral surface of right circular cylindrical shape and having open opposite end portions each provided with a closure member to afford an inner chamber for the contents of the container, access to the chamber being provided through one of the closure members, the lateral surface of said sidewall being provided with a plurality of peripheral adjacent rows of inwardly directed, similarly shaped embossments affording between adjacent rows an outwardly directed peripherally extending rib means providing an annular line of fold between adjacent rows, each embossment of each row being spaced from adjacent embossments of each row to afford a narrow arcuate increment of the lateral surface of the sidewall therebetween, and each embossment being elongate peripherally to provide a major portion of arcuate cross section and outwardly curved end minor portions each joining an adjacent increment of the lateral surface, each row of said embossments being positioned substantially perpendicular to the axis of the container and each being angularly offset in a peripheral direction from an adjacent row of embossments to position each lateral surface increment of a row in axial alignment with a major embossment portion in an adjacent row, whereby manual axial pressure on the container through said peripheral sidewall will collapse said sidewall in a predetermined pattern by bending peripherally on each rib means and by folding inwardly the major and minor portions of each embossment of each row to form in each row an annular series of folded segments, each segment extending between adjacent increments of the lateral surface in a row, and the segments of each row being angularly offset in a peripheral direction with respect to the segments formed in an adjacent row.

4,316,552
WIRE EGG CASE
George L. Hurley, III, Philomath, Oreg., assignor to Hensway, Inc., Corvallis, Oreg.
Filed May 5, 1980, Ser. No. 146,388
Int. Cl.³ B65D *6/08*
U.S. Cl. 220—19 **3 Claims**



1. A wire case for holding stacked egg-carrying trays comprising:

a wire-strand floor and opposed wire-strand end walls joined to and projecting upwardly from opposed ends of said floor;

a wire-strand cover for the case, hinge means connecting the cover at one end to the upper margin of one end wall, and means detachably fastening the cover at its opposite end to the upper margin of the other end wall,

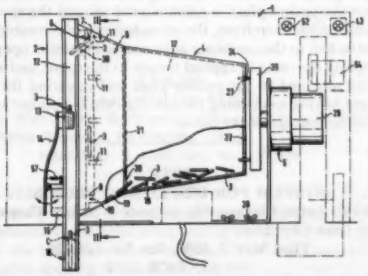
said cover on detachment from said other end wall being swingable about the axis provided by said hinge means to open up the top of the case,

said end walls, on each of the opposed sides of the case, in a region extending up from the floor being unjoined from each other save for the joinder provided by said cover when such is detachably fastened to said other end wall,

said cover having tray-seating means located downwardly from the plane of the top of the cover for seating the top of a tray placed thereagainst and inhibiting its lateral shifting,

said floor having tray-seating means located upwardly from the plane of the bottom of the floor for seating a tray placed thereon and inhibiting its lateral shifting.

4,316,553
AUTOMATIC LOTTERY TICKET VENDING MACHINE
Frans-Erik Persson, Vargatan 17, Lomma, Sweden (234 00)
Filed Jan. 16, 1980, Ser. No. 112,785
Claims priority, application Sweden, Jan. 17, 1979, 7900407
Int. Cl.³ B23O *7/12*
U.S. Cl. 221—167 **10 Claims**



1. An improvement in an automatic lottery ticket vending

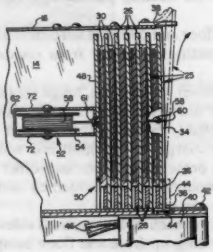
machine, whereby a rotatable drum (4) is adapted for mixing lottery tickets (3) which, upon ticket purchase, are dispensed one or in a definite number at a time from the machine via a dispensing means (2), characterized in that the drum comprises a separate ticket storage container (4) which is connectable to a guiding means (6) of the dispensing means (2), rotating means (5) for said drum, said guiding means (6) provides a separation path (10) with a ticket-guiding member (9) and which includes a ticket-driving portion (8) which upon rotation of the ticket storage container (4) feeds tickets (3) towards and into the separation path (10), said separation path (10) being adapted to permit discharge of one or a definite number of tickets (3) through an opening (7) and via the dispensing means (2) but prevent other tickets (3) from moving out of the ticket storage container (4).

4,316,554

AERIAL MARKER LAUNCHER

William R. J. Lloyd, Tacoma, Wash., assignor to Pacific Paper Products, Inc., Tacoma, Wash.

Filed Feb. 22, 1980, Ser. No. 123,897
Int. Cl.³ B64D *1/02*
U.S. Cl. 221—232 **4 Claims**



1. An aerial marker launcher for dropping a series of markers from an aircraft, while it is in flight, to the ground to indicate its line of flight, each marker including a stiff base member and a flexible, streamer-like strip attached to one face of the base member, the launcher comprising:

(a) an elongated container having means to attach it to an aircraft, the container being configured to hold a plurality of markers in a stack and having an opening in one end thereof to allow ejection of the markers,

(b) ejector means secured to the container and arranged to releasably engage the marker nearest the container opening and eject it from the container,

(c) a pusher plate abutting the end of the stack inside the container and movable therein toward the container opening to position the markers one at a time for ejection by the ejector means, and

(d) a spring assembly comprising a spool mounted rotatably on the pusher plate, a cable wound around the spool and extendable therefrom, the extended end of the cable being attached to the container adjacent said ejection opening, a spring operable to applied torque to the spool, and a housing attached to the pusher plate and covering the spool and having an opening therein adjacent the pusher plate to allow passage of the cable.

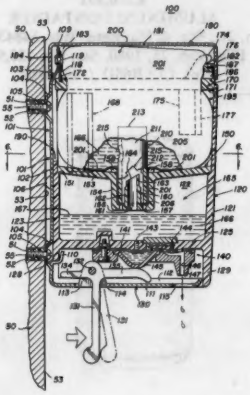
4,316,555

SYSTEM FOR DISPENSING FLUIDS

Randel P. Smith, Chicago, Ill., assignor to Steiner Corporation, Salt Lake City, Utah

Filed Mar. 3, 1980, Ser. No. 126,420
Int. Cl.³ B67B *7/28*
U.S. Cl. 222—83.5 **20 Claims**

1. A system for dispensing fluid comprising a closed wall structure defining a container, partition means separating said container into a lower compartment and an upper compartment, dispensing means carried by said container for dispensing fluid from said lower compartment, said partition means having a refill well therein including a side wall portion extending into said lower compartment and an inner wall portion closing the inner end of said side wall portion, a piercing member carried by said inner wall portion and projecting therefrom into said refill well, said inner wall portion having a refill aperture therethrough providing direct communication between said lower compartment and said upper compartment, a fluid refill pouch removably enclosed within said upper compartment in a refill configuration, said fluid refill pouch including a flexible encompassing wall sealed to form a hollow flexible container with a quantity of fluid therein, and a docking adaptor initially loosely disposed within said pouch completely unrestrained with respect to the flexible encompassing wall of said pouch, said docking adaptor including an outer wall having an outer size slightly less than the inner size of said side wall portion of said refill well so as to fit thereinto with the flexible wall of said pouch disposed between the inner surface of said side wall portion of said refill well and the outer surface of said outer wall to form a seal therebetween, said docking adaptor including an inner wall having an inner size slightly greater than the lateral extent of said piercing member so that said docking adaptor can be pushed into said well and over said piercing member, a portion of said flexible wall overlying the end of said docking adaptor as it is inserted into said refill well receiving said piercing member in piercing relationship therethrough, whereby fluid may flow freely from said refill pouch through said refill aperture while being prevented from flowing around said docking adaptor disposed within said refill well and out of said refill well by the seal provided by the portion of said flexible wall disposed between the inner surfaces of said side wall portion and the outer surface of said outer wall.



4,316,556

FLEXIBLE CONTAINER AND EXPELLER

Mario Ferrari, 8 Holden Rd., Cherry Hill, N.J. 08034

Filed Dec. 6, 1979, Ser. No. 100,898
Int. Cl.³ B65D *35/28*
U.S. Cl. 222—95 **12 Claims**

1. In a flexible container and expeller, the combination of

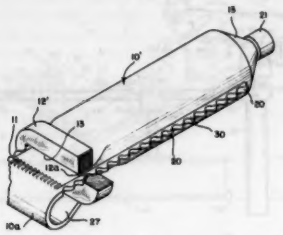
a body comprising flexible sidewalls, which sidewalls define a compressible storage space,

the body terminating forwardly in a contents dispensing opening and rearwardly in a fixed closure;

expeller means positioned between the closure and the open-

ing and being movable relative to the body to urge the contents from the closure toward the dispensing opening, the expeller means being provided with a slot, a part of the flexible sidewalls always being positioned within the slot as the expeller means is moved,

whereby movement of the expeller means toward the dispensing opening compresses the storage space and urges the contents toward the dispensing opening; characterized in that the container includes a flattened section, in transverse sectional view, said flattened section extending rearwardly of the closure and being affixed to the expeller means rearwardly of said closure, the flattened section being adapted to be grasped as the expeller means is moved.

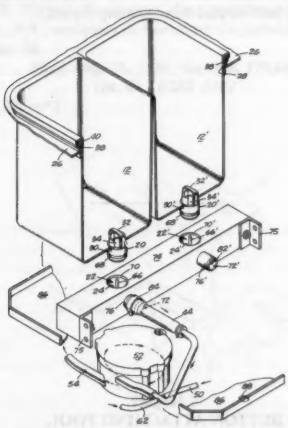


4,316,557

BEVERAGE DISPENSER WITH REMOVABLE TANK CONNECTION MEANS

Samie Benoun, Sepulveda, and Charles R. Lacy, Orange, both of Calif., assignors to Sunkist Growers, Inc., Sherman Oaks, Calif.

Filed Dec. 17, 1979, Ser. No. 104,136
Int. Cl.³ B67D *1/00*
U.S. Cl. 222—129.1 **9 Claims**



1. In a liquid beverage dispenser having a housing, a tank removably disposed in the housing and having a bottom outlet, a beverage dispensing valve spout, pumping means for delivering liquid beverage from the tank to the valve spout, and means for removably connecting the tank bottom outlet with said pump, the improvement comprising:

a cylindrical downwardly extending outlet element connected with said tank;

receptacle means fixedly mounted on said housing and having a cylindrical walled passage formed therein;

one end of said passage being adapted to slidingly engage and disengage said outlet element respectively during placement and removal of said tank, and the other end being adapted for connection with said pump;

a normally closed valve in said outlet element;

a valve at said other end of said passage for enabling flow from said connected tank to said pump, but preventing reverse flow; and

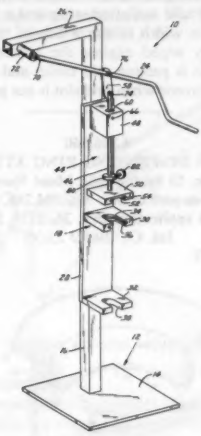
means fixedly mounted in said passage and extending through said one end of said passage for opening said valve in the outlet element, when the outlet element is slidingly engaged by said one end of said passage.

4,316,558

APPARATUS FOR PIPETTING DILUENT INTO A SEALED MEDICAL CONTAINER

Robert J. Kubiak, 8042 Old E, Rte. 1, Omro, Wis. 54963

Filed Jan. 21, 1980, Ser. No. 114,070
Int. Cl.³ B67D *5/06*
U.S. Cl. 222—181 **7 Claims**



1. A syringe dispensing apparatus comprising a base, support column mounted on said base and having a support arm extending transversely to the axis of the support column,

means mounted on the support column for supporting a plunger actuated syringe,

an actuating lever pivotally mounted on the support arm,

plunger means for connecting said actuating lever to the plunger of a syringe,

means mounted on the support column for guiding the axial movement of the plunger means with respect to the syringe plunger, whereby pivotal movement of the actuating lever on the support arm will move the syringe plunger axially into the housing of the syringe to dispense fluid from the syringe.

4,316,559

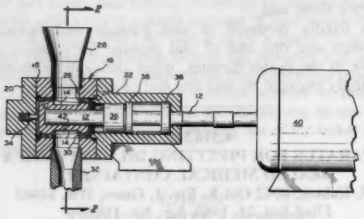
ROTARY SOLIDS FEEDER

Jerry R. McLemore, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 4, 1980, Ser. No. 127,024
Int. Cl.³ G01F *11/00*
U.S. Cl. 222—225 **11 Claims**

1. A rotary solids feeder, comprising; a horizontally disposed, generally tubular housing having an upper inlet opening through the tubular sidewall of said tubular housing and a lower outlet opening diametrically opposite said inlet opening through said tubular sidewall of said tubular housing; a solid, rotatable rotor means mounted in said tubular housing in close, bearing relationship thereto, having at least one trough cut in

the outer periphery thereof in a direction perpendicular to the axis of said rotor and having a width greater than the diameter of said inlet and outlet openings; said housing being closed, except for passage therethrough of shaft means fixedly attached to said rotor and adapted to rotate said rotor; resilient



scraper means having one end fixedly mounted in said tubular housing adjacent said outlet opening and a free flat end substantially equal in width to the width of the bottom of said trough resiliently urged against the bottom of said trough when said trough is passing said outlet and against the outer periphery of said rotor when said slot is not passing said outlet.

4,316,560

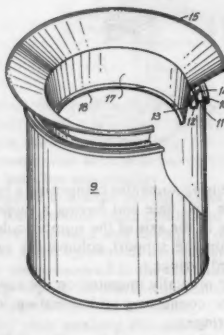
PAINT CAN DISPENSING RING ATTACHMENT

Richard T. Carter, 13 Spring Hill, Mont Vernon, N.H. 03057

Continuation-in-part of Ser. No. 704,746, Jul. 12, 1976, abandoned. This application Dec. 26, 1978, Ser. No. 972,951

Int. Cl.³ B65D *25/48*

U.S. Cl. 222—567 **1 Claim**



1. A dispensing ring attachment for a container having a circular opening defined by a sealing rim communicating with the peripheral wall of the container, said attachment being of unitary construction and comprising a circumferentially extending pouring lip issuing from said opening outwardly over said rim and the peripheral wall of the container, said lip terminating with a downwardly turned peripheral edge and communicating inwardly with a downwardly and inwardly tapering thin conical skirt of constant thickness adapted to compressively engage with and provide a continuous liquid tight seal against the sealing rim of the container, said thin conical skirt being circumferentially compressed by engagement with the said rim to form a temporary depressed seat locally changing the contour of both sides of the skirt, said inwardly tapering skirt being disposed at a tapering angle to the plane of said sealing rim in the range of 2 to 10 degrees, and maintaining substantially the same taper both above and below said rim after insertion therewithin, said skirt terminating at its lowermost extremity with an annular collar defined by concentric inner and outer surfaces both smaller in diameter than the sealing rim of the can.

4,316,561

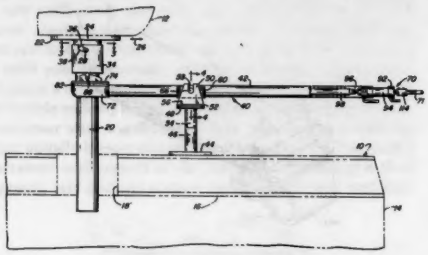
POUR TUBE LATCHING APPARATUS

John A. Grosko, South Park Township, Allegheny County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Aug. 5, 1980, Ser. No. 175,469

Int. Cl.³ B22D *41/08*

U.S. Cl. 222—606 **18 Claims**



1. Apparatus for mounting a shroud tube in operative relation to the pour opening in a bottom-pour teeming vessel comprising:

(a) a stationary base;

(b) a pivot saddle mounted on said base for rotation about a vertical axis thereof;

(c) open-ended journal means pivotally mounted to said saddle;

(d) an elongated arm received in said journal means and supported therein for axial and rotatable movement;

(e) means at one end of said arm for vertically suspending a shroud tube, said means including means for rotating said shroud tube about its longitudinal axis;

(f) means at the other end of said arm for manually moving said arm with respect to said journal means; and

(g) means operable from said other end of said arm for actuating said shroud tube rotating means.

4,316,562

BUTTON ATTACHING TOOL

Donald R. Davidson, Berkeley Heights, and Wesley R. Peterson, Boundbrook, both of N.J., assignors to The Singer Company, Stamford, Conn.

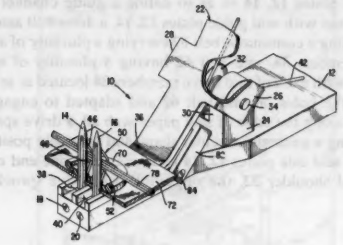
Filed May 2, 1980, Ser. No. 145,939

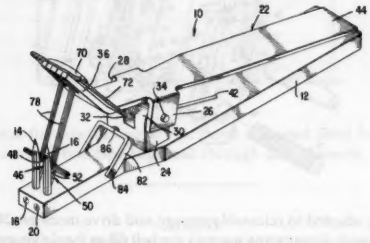
Int. Cl.³ D05B *85/00, 3/14*

U.S. Cl. 223—102 **11 Claims**

1. A button attaching tool including a base; a pair of needles projecting from the base for use in penetrating a layer of material and extending through the holes of a button to be attached to the material, each such needle having a length of resilient wire thereon forming an eye which can collapse to pass through the material and buttonholes, and expand to receive

and hold a thread bundle over the material and button; and a member mounted for movement on the base, engageable with





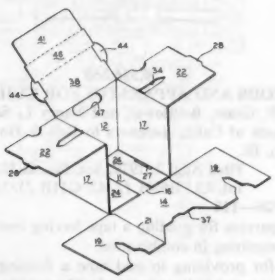
the underside of the material, and operable to strip the material and button from the needles.

4,316,563

CONTAINER FOR DISPENSING ROLLED PRODUCT

Gerald W. Turner, Norristown, Pa., and Donald F. Wischoff, Fulton, N.Y., assignors to Container Corporation of America, Chicago, Ill.

Filed Aug. 18, 1980, Ser. No. 179,053
Int. Cl.³ B26F *3/02*
U.S. Cl. 225—41 **8 Claims**



1. A shipping container for a product supported upon a core in turn supported on the walls of said container, said container being formed from a cut and scored blank of paperboard or the like and comprising:

(a) a bottom panel having opposed end panels foldable with respect thereto to erected position;

(b) opposed side panels foldable with respect to one of said end panels to erected position to define opposed outer side panels, said opposed side panels having flaps foldable with respect thereto along bottom edges and into position over said bottom panel;

(c) opposed first inner reinforcing panels foldable with respect to the sides of the other of said end panels and erectable into position against the insides of said opposed side panels;

(d) second inner reinforcing panels foldable with respect to said opposed side panels along the upper edges thereof and into position against said first reinforcing panels;

(e) said first and second reinforcing panels being provided with slots in register and in facing relationship with the slots of an opposite pair of reinforcing panels to receive the ends of a core having product wound thereon; and

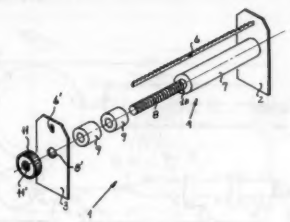
(f) said bottom panel and one of said flaps being cut and scored to provide a removable blank for holding into position to define a core for support of said product.

4,316,564

DISPENSER FOR TINFOIL AND THE LIKE

Luigi Felicetti, Milan, Italy, assignor to Euram Italia S.p.A., Milan, Italy

Filed Jul. 22, 1980, Ser. No. 171,105
Claims priority, application Italy, Jul. 27, 1979, 22221/79[U]
Int. Cl.³ B26D *1/02*
U.S. Cl. 225—77 **8 Claims**



1. A dispenser for sheet material wound on a roll, comprising:

a first and a second cheek;

a roll-supporting cylindrical mandrel having a first extremity secured to said first cheek and a second extremity passing through a hole in said second cheek;

a serrated blade parallel to said mandrel having one end fixed to said first cheek and another end traversing a slot in said second cheek; and

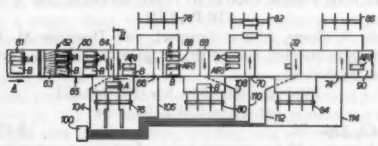
fastening means engaging said second extremity and said second cheek for removably holding same at a selected distance from said first cheek, thereby accommodating rolls of different lengths.

4,316,565

SHEET TRANSFER APPARATUS

Joseph B. Hodgkinson, Billinge, near Wigan, and Geoffrey H. Branch, Golborne, near Warrington, both of England, assignors to Pilkington Brothers Limited, St. Helens, England

Filed Feb. 21, 1979, Ser. No. 13,632
Claims priority, application United Kingdom, Feb. 20, 1978, 6685/78
Int. Cl.³ C03B *33/02*; B65H *29/32*
U.S. Cl. 225—99 **15 Claims**



1. Apparatus for marshalling sheets comprising a conveyor capable of conveying an array of sheets lying in a transverse

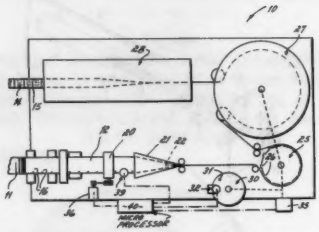
sheet array across the conveyor to a sheet removal station, transverse conveying means extending transversely above the conveyor so as to be capable of receiving a sheet from each and every position in said sheet array at said sheet removal station, transfer means operable to transfer a sheet or sheets from the conveyor to the transverse conveying means at the sheet removal station, said transfer means comprising a plurality of selectively and separately operable transfer devices extending in an array across the array of sheet positions, and control means for controlling the action of said transfer devices to cause simultaneous operation of any selected transfer devices and thereby transfer a selected sheet or sheets to the transverse conveying means.

4,316,566

APPARATUS FOR REGISTRATION AND CONTROL FOR A MOVING WEB

Norman Arleth, Cincinnati, Ohio, and Paul E. Dieterlen, Covington, Ky., assignors to R. A. Jones & Co. Inc., Covington, Ky.

Filed Jul. 17, 1980, Ser. No. 169,852
Int. Cl.³ B65H *23/18*; B65B *57/16*
U.S. Cl. 226—2 **8 Claims**



1. Apparatus for achieving and maintaining proper registration of a web to a rotating member around which it passes, said web having a plurality of longitudinally spaced registration marks and being driven by a machine which includes the rotating member, said apparatus comprising,

drive rolls through which said web passes,

a stepping motor connected to said drive rollers to drive said rollers,

means for supplying pulses to said stepping motor to continuously rotate said motor,

means producing an output of pulses whose frequency is proportional to the speed of the machine,

a scanner associated with said web for producing a registration pulse as each registration mark passes said scanner,

means generating a land pulse each time a registration mark is to land on said rotating element,

means for monitoring the interval of time between the occurrence of said registration mark and land pulses, respectively,

and means for varying the frequency of the pulses supplied to said stepping motor to shorten said interval between registration mark and land pulses.

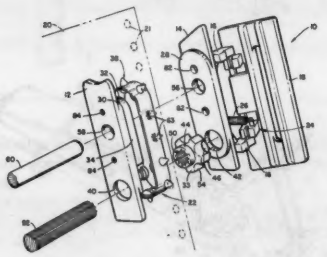
4,316,567

TRACTOR FOR ENGAGING AND ADVANCING A WEB OF PAPER

Horace S. Grear, Mount Prospect, and Theodore M. Leno, Arlington Heights, both of Ill., assignors to Teletype Corporation, Skokie, Ill.

Filed Apr. 21, 1980, Ser. No. 141,821
Int. Cl.³ G03B *1/30, 1/34*
U.S. Cl. 226—74 **8 Claims**

1. A tractor **10** for engaging and advancing a paper web **20** across the print station of a printer, said paper web **20** having spaced holes **21** along at least one edge thereof, said tractor **10** including a pair of generally planar side plates **12, 14** being spacially and parallely positioned, an elongated guide shoulder **32** defining a continuous guide surface **34** positioned between said side plates **12, 14** so as to define a guide channel **36** in cooperation with said guide plates **12, 14**, a drive belt assembly **22** including a continuous belt **62** carrying a plurality of spaced drive members **38**, said belt **62** having a plurality of spaced holes **63** with each of said drive members **38** located at selected ones of the holes on said belt **62** and adapted to engage the holes **21** along the edge of said paper web **20**, a drive sprocket **33** defining a generally circular shape and rotatably positioned between said side plates **12, 14** and located at one end of said elongated shoulder **32**, the surface of said drive sprocket **33**



being adapted to releasably engage said drive members **38** so as to provide linear movement to the belt **62** as the drive sprocket **33** is rotated, said guide channel **36** and said drive sprocket **33** defining a continuous path for said drive belt assembly **22**, characterized by:

each of said drive members **38** having a substantially hemicylindrically shaped base **64**, the longitudinal axis of the base **64** is oriented transverse to the direction of travel of the belt **62**, the longitudinal edges of said hemicylindrical base **64** being relieved **68**, **68***a* to allow the belt **62** to conform to the curved contour of the drive sprocket **33** and the guide channel **36** as the base **64** of the drive members **38** are engaged by the drive sprocket **33** and the drive belt assembly **22** is thereby moved along the guide channel **36**.

4,316,568

METHODS AND APPARATUS FOR GUIDING TAPE

Frederic F. Grant, Bellflower, and Nancy L. Sarkisian, Pasadena, both of Calif., assignors to Bell & Howell Company, Chicago, Ill.

Filed Aug. 2, 1979, Ser. No. 63,323
Int. Cl.³ B65H *17/42*; G11B *15/58*
U.S. Cl. 226—118 **34 Claims**

21. Apparatus for guiding a tape having two opposite tape edges, comprising in combination:

means for providing in said tape a floating arcuate bend having equal radii at both of said tape edges;

means coupled to said tape for advancing said tape through said bend having said equal radii; and

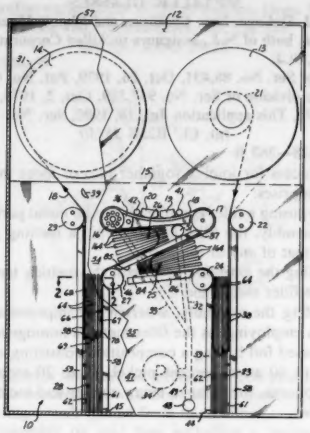
means for creating within said bend at said tape edges an unbalance providing a net force transversely of said tape for applying said advancing tape at one of said tape edges with said net force to a reference surface while maintaining said equal radii, said means for creating said unbalance including:

spaced channels in said reference surface extending below said reference surface;

a further surface spaced from said reference surface;

means for establishing at said bend a first fluid leakage be-

tween the other of said tape edges and said further surface; and



means for establishing at said bend a second fluid leakage past said one tape edge and through said channels.

4,316,569

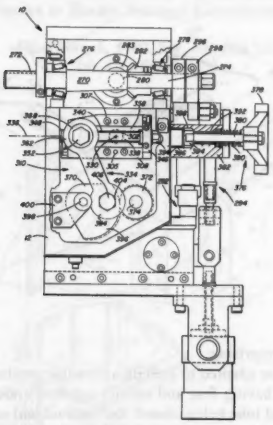
OSCILLATING CAM FEED APPARATUS FOR A PRESS

Joseph P. Gentile, Pittsburgh, Pa., assignor to Vamco Machine and Tool, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 112,066, Jan. 14, 1980, abandoned. This application Aug. 28, 1980, Ser. No. 182,463

Int. Cl.³ B65H *17/36*

U.S. Cl. 226—158 **30 Claims**



22. Apparatus for intermittently clamping a workpiece comprising,

an input shaft supported for rotation at a continuous preselected speed,

a linkage pivotally mounted at a first end relative to said input shaft,

cam means nonrotatably connected to said input shaft for generating oscillating pivotal movement of said linkage,

clamp means for intermittently engaging the workpiece to prevent movement of the workpiece,

cylinder means having a rod extending from one end of said cylinder means,

said clamp means being connected to said rod,

support means for supporting said cylinder means for upward and downward reciprocal movement,

said linkage being positioned in abutting relation at a second end to said cylinder means,

said linkage being intermittently pivoted upwardly and downwardly upon rotation of said cam means to reciprocate said cylinder means upwardly and downwardly on said support means, and

said clamp means being intermittently movable into and out of clamping engagement with the workpiece upon movement of said cylinder means.

4,316,570

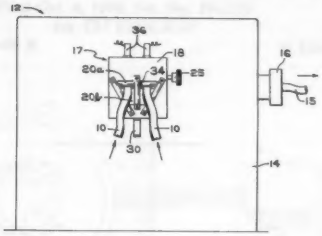
APPARATUS FOR FEEDING STRIPS OF RUBBER COMPOSITIONS SIMULTANEOUSLY INTO AN EXTRUDER

Howard L. Kuster, Stow, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Apr. 28, 1980, Ser. No. 144,514

Int. Cl.³ B65H *17/22*

U.S. Cl. 226—176 **4 Claims**



1. A feeder device adapted to be associated with a screw-type extruder for insuring that separate strips of unvulcanized rubber composition feed simultaneously through said feeder device and into said extruder at substantially the same linear rate, said feeder device comprising a pair of opposed feed rolls mounted to rotate freely about their respective axis, means for guiding said strips of rubber composition between the opposing faces of said feed rolls, and means for resiliently urging said feed rolls together whereby said feed rolls will positively grip said strips of rubber composition as said strips are advanced between said feed rolls.

4,316,571

WALL CONSTRUCTION METHOD FOR SWIMMING POOLS

John F. Corna, 1542 N. Crest Ave., Columbus, Ohio 43220, and Marcel H. Blais, 8085 Manitou Dr., Westerville, Ohio 43081

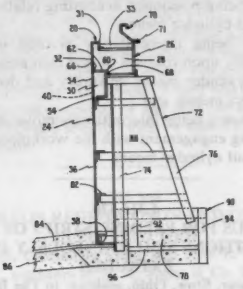
Division of Ser. No. 918,793, Jun. 26, 1978, Pat. No. 4,179,761. This application Jul. 16, 1979, Ser. No. 57,647

Int. Cl.³ E04H *3/20*

U.S. Cl. 228—173 C **1 Claim**

1. The steps in the method of making swimming pool wall sections that include a gutter and recirculating conduit, which method comprises forming a first main sheet metal member from a single sheet of stock that is continuous from a top gutter-forming upper edge to bottom seal forming lower edge; forming a second main sheet metal member from a sheet of stock to include a gutter outer portion and a conduit outer portion; positioning said second member at a vertical position relative to said first member to establish a preselected cross-sectional area for the gutter; welding said second member to said first member whereby said first member forms inner walls for said gutter and conduit; forming a third sheet metal mem-

ber with a vertical dimension selected to provide a preselected cross-sectional area for the conduit; welding said third sheet metal member between said two main members to form a top closure for the conduit; forming a deck coping member with a



vertical dimension selected to position the top of the coping member at a preselected height above said gutter forming upper edge of the first main member; and welding said coping member to said gutter outer portion of the second main member.

4,316,572

HOMOGENEOUS, DUCTILE BRAZING FOILS

Peter Sexton, Randolph, and Nicholas J. DeCristofaro, Madison, both of N.J., assignors to Allied Corporation, Morristown, N.J.

Division of Ser. No. 959,974, Nov. 13, 1978, Pat. No. 4,283,225, which is a division of Ser. No. 912,667, Jun. 5, 1978, Pat. No. 4,148,973, which is a continuation of Ser. No. 751,000, Dec. 15, 1976, abandoned. This application Jun. 23, 1980, Ser. No. 161,942

Int. Cl.³ B23K *35/30*

U.S. Cl. 228—263 R **7 Claims**

1. An improved process for joining together two or more metal parts which comprises:

(a) interposing a filler metal between the metal parts to form an assembly, the filler metal having a melting temperature less than that of any of the metal parts;

(b) heating the assembly to at least the melting temperature of the filler metal; and

(c) cooling the assembly,

wherein the improvement comprises employing at least one homogeneous, ductile filler metal foil composed of metastable material having at least 50 percent glassy structure, said foil having a composition consisting essentially of 0 to about 4 atom percent iron, 0 to about 21 atom percent chromium, 0 to about 16 atom percent boron, 0 to about 19 atom percent silicon, 0 to about 22 atom percent phosphorus and the balance essentially nickel and incidental impurities, wherein the composition is such that the total of iron, chromium and nickel ranges from about 76 to 84 atom percent and the total of boron, silicon and phosphorus ranges from about 16 to 24 atom percent.

4,316,573

HOMOGENEOUS BRAZING FOILS OF COPPER BASED METALLIC GLASSES

Nicholas J. DeCristofaro, Chatham, and Claude Henschel, Mt. Freedom, both of N.J., assignors to Allied Corporation, Morristown, N.J.

Division of Ser. No. 88,431, Oct. 26, 1979, Pat. No. 4,253,870, which is a division of Ser. No. 947,329, Oct. 2, 1978, Pat. No. 4,209,570. This application Jul. 18, 1980, Ser. No. 170,249

Int. Cl.³ B23K *35/30*

U.S. Cl. 228—263 R **8 Claims**

4. A process for joining together two or more metal parts which comprises:

(a) interposing a filler metal between the metal parts to form an assembly, the filler metal having a melting point less than that of any of the parts;

(b) heating the assembly to at least the melting temperature of the filler metal; and

(c) cooling the assembly; wherein the improvement comprises employing, as the filler metal, a homogeneous copper based foil having a composition consisting essentially of 5 to 40 atom percent nickel, 15 to 20 atom percent phosphorus, the balance being copper and incidental impurities.

4,316,574

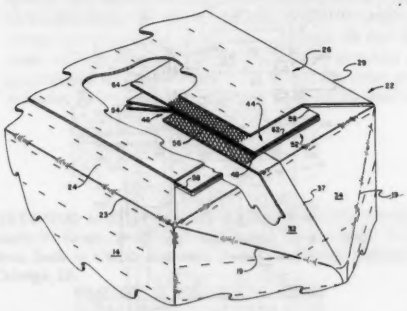
SLEEVE VALVE FOR FLEXIBLE BAGS

J. George Lepisto, Middletown, Ohio, assignor to Champion International Corporation, Stamford, Conn.

Filed Apr. 4, 1980, Ser. No. 137,247

Int. Cl.³ B65D *31/14*

U.S. Cl. 229—62.5 **11 Claims**



1. A bag comprising:

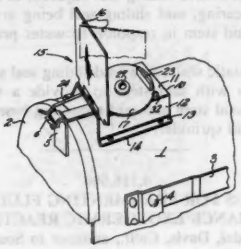
a flexible tube adapted to contain a flowable product therein, said tube having first and second opposed ends, said first end of said tube being closed, said second end of said tube having a filler opening therein through which said flowable product may be delivered into said bag, said tube including a first and second flap overlapping each other on said second end thereof; and

a flexible, elongated sleeve valve extending through said opening, said sleeve valve having first and second extremities, said first extremity being disposed within said opening being interposed between said first and second flaps, and said second extremity extending into the interior of said tube and freely suspended within said interior of said tube.

4,316,575
MAILBOX INDICATOR

Juel L. VanDarwarka, 2120 W. 23rd, Eugene, Oreg. 97405

Filed Jun. 10, 1980, Ser. No. 158,323
Int. Cl.³ A47G 29/12
U.S. Cl. 232—35 6 Claims

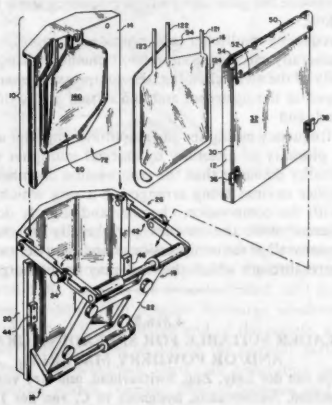


1. An indicator for mailbox attachment comprising,
a base for securement to a door closed mailbox, said base including a wall spaced from the mailbox,
a flag assembly on said base including a carrier plate, a spring biased flag hingedly mounted on said plate, pivot means mounting said carrier plate on said base wall, latch means operable to retain the flag in a retracted position, and,
a flag release assembly including an arm swingably mounted at one of its ends to said base and terminating at its distal end in the path of the mailbox door, flag release means carried by said arm and engageable with said flag upon door opening to disengage same from said latch means.

4,316,576
METHOD AND CHAMBER FOR SEPARATING GRANULOCYTES FROM WHOLE BLOOD

Herbert M. Cullis, and Luiz F. Gutierrez, both of Silver Spring, Md., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Nov. 6, 1980, Ser. No. 204,724
Int. Cl.³ B04B 5/02
U.S. Cl. 233—26 79 Claims

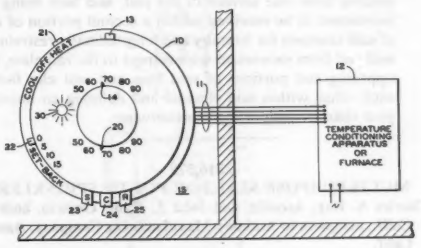


1. A method for separating whole blood into the components thereof within a separation chamber mounted in a centrifuge device during centrifugation of the chamber, the chamber having inner and outer wall surface and first and second side edges, said method comprising the steps of arranging and configuring the chamber such that it has (a) an inlet on the first side thereof through which whole blood is received, (b) a first upper outlet at the top of the chamber from which plasma with particles therein is withdrawn, (c) a second lower outlet at the bottom corner of the chamber on the second side thereof from which red blood cells are withdrawn, and (d) the inner wall surface positioned in a plane including a tangent to a circle about the axis of rotation and the plane positioned about normal (in a vertical direction) to a radius extending from the axis of rotation of the centrifuge device; directing whole blood into the chamber from the first side thereof at a point between the bottom and top of the chamber; directing heavier particles such as red blood cells downwardly and outwardly along the outer wall surface toward the lower bottom corner of the chamber; and directing plasma upwardly along the inner wall surface of the chamber, so that there is separation of white blood cells, particularly granulocytes, from the whole blood, which are directed with the plasma, toward and out the first outlet from the chamber.

4,316,577
ENERGY SAVING THERMOSTAT

John T. Adams, Minneapolis; Arlon D. Kompelien, Richfield; Marvin D. Nelson, St. Louis Park, and B. Hubert Pinckaers, Edina, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 6, 1980, Ser. No. 194,210
Int. Cl.³ F23N 5/20
U.S. Cl. 236—46 R 11 Claims



1. A thermostat adapted to be connected to a remote temperature conditioning apparatus for controlling the temperature of air in a space to maintain a first temperature during a first period of time and a second temperature during a second period of time, comprising,
temperature responsive means responsive to a space temperature,
control circuit means adapted to be connected to the temperature conditioning apparatus,
means connecting said temperature responsive means to said control circuit means for establishing a control temperature to maintain the first temperature in the space,
single button manually settable electronic time interval means for providing a second period of time, and
means connecting said time interval means to said control circuit means to change said control temperature to maintain a second temperature in the space for said second period of time each day.

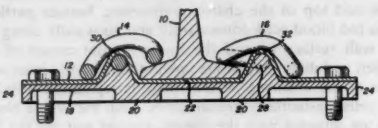
4,316,578
DIRECT FIXATION RAIL FASTENER UTILIZING A PAD OF ELASTOMER

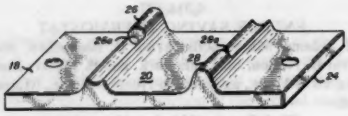
Clarke Reynolds, 16 St. Bernard La., Tiburon, Calif. 94920, and Richard J. Quigley, 25538 Adobe La., Los Altos Hills, Calif. 94022

Filed Jun. 2, 1980, Ser. No. 155,427
Int. Cl.³ E01B 9/48, 9/62, 9/68
U.S. Cl. 238—283 3 Claims

1. In a fastener for supporting a rail on a support structure

which includes, a rail plate for supporting the rail which has a well dimensioned to accommodate the rail, the sides of the well being formed by bows of generally U-shaped configuration in the rail plate, the bows defining channels on the underside of the rail plate, a pair of clips anchored in and occupying a first portion of each channel for resiliently clamping the rail to the rail plate, a pad of elastomer mounted between the rail plate and the support structure, and a pair of posts connected to the support structure for laterally restraining the rail plate with





respect to the support structure, the improvement of the pad of elastomer comprising:

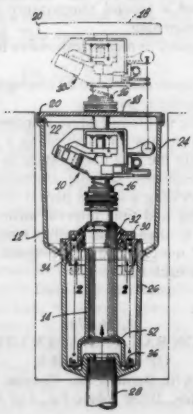
at least one generally U-shaped boss integral with and extending from one surface of the pad, said boss being dimensioned to be received within a second portion of one of said channels for laterally and longitudinally restraining said pad from movement with respect to the rail plate, the opposing end portions of said boss and said clip facing each other within said channel and defining an unoccupied channel midportion therebetween.

4,316,579

MULTI-PURPOSE SEAL FOR POP-UP SPRINKLER

Charles A. Ray, Arcadia, and John L. Kent, Ontario, both of Calif., assignors to Anthony Manufacturing Company, Azusa, Calif.

Filed Apr. 11, 1980, Ser. No. 138,868
Int. Cl.³ B05B *15/10*
U.S. Cl. 239—123 **22 Claims**



1. In combination with a pop-up type irrigation sprinkler having a generally stationary housing and a pop-up stem arranged for reciprocation in said housing, a seal disposed between said pop-up stem and a mounting base on said housing; said seal comprising:

a grit wiper surrounding said pop-up stem and being disposed generally adjacent the top of said seal;

a central bearing arranged to slidingly engage said stem for guiding said reciprocation of said stem;

a pressure activated sliding seal adjacent to and below said central bearing, said sliding seal being arranged to bear against said stem in response to water pressure thereon; and

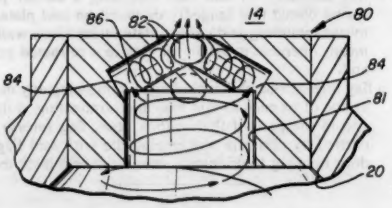
an annular static seal below said sliding seal and arranged to cooperate with said stem to provide a watertight seal between said stem and said mounting base during operation of said sprinkler.

4,316,580

APPARATUS FOR FRAGMENTING FLUID FUEL TO ENHANCE EXOTHERMIC REACTIONS

Conrad A. Bodai, Davis, Calif., assignor to Sontek Industries, Inc., Dallas, Tex.

Filed Jul. 13, 1979, Ser. No. 57,394
Int. Cl.³ B05B *1/34, 17/06*
U.S. Cl. 239—466 **16 Claims**



1. Apparatus for fragmenting fluids into superfine constituents comprising:

a vortex generator of generally circular cross section into which a fluid under pressure is tangentially fed to produce a vortical flow;

means for supplying fluid to the swirl chamber;

a frequency multiplier and amplitude amplifier disposed downstream of the swirl chamber, responsive to the fluid pressure for generating a high frequency sonic field in the flow;

a frequency multiplier and amplitude amplifier having a generally circular compression chamber disposed coaxially of the swirl chamber, the compression chamber being open at the upstream end and closed at the downstream end; and

the frequency multiplier and amplitude amplifier also having a plurality of generally cylindrical multiplier cavities of smaller diameter than the compression chamber, the multiplier cavities being arranged in a ring which is coaxial with the compression chamber and slightly downstream thereof with the cavities peripherally intersecting the outer wall of the compression chamber to define a series of ports through which the flow may be discharged.

4,316,581

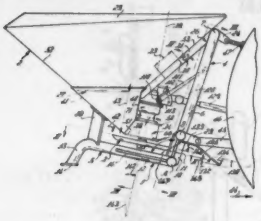
SPREADER SUITABLE FOR SPREADING GRANULAR AND/OR POWDERY MATERIAL

Cornelis van der Lely, Zug, Switzerland, and Ary van der Lely, Maasland, Netherlands, assignors to C. van der Lely, N.V., Maasland, Netherlands

Filed May 9, 1979, Ser. No. 37,449
Claims priority, application Netherlands, May 5, 1978, 7804823
Int. Cl.³ A01C *17/00*
U.S. Cl. 239—682 **36 Claims**

1. A spreader for spreading granular and/or powdery mate-

rial comprising frame means, a hopper and at least one distributor in communication with said hopper, said distributor being mounted for movement to eject material during operation and turnable about an upwardly extending axis, driving means including a transmission connected to turn said distributor, said



hopper including feeding means located in a lower delivery portion of said hopper, said delivery portion being rigidly contiguous with and projecting substantially perpendicularly to said axis relative to the rest of said hopper from which it directly receives material, said feeding means comprising at least one port located above said distributor.

4,316,582

DEVICE FOR PAINTING BY ELECTROSTATIC POWDER SPRAYING

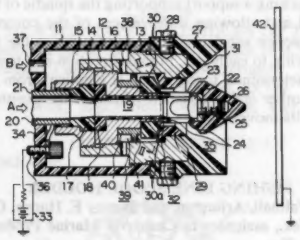
Nobuo Kobayashi, Toyota, and Hiroyoshi Kako, Aichi, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Apr. 22, 1980, Ser. No. 142,660

Claims priority, application Japan, Oct. 3, 1979, 54/136256[U]

Int. Cl.³ B05B *5/00*

U.S. Cl. 239—692 **4 Claims**



1. A device for painting by electrostatical powder spraying, which device comprises: a nozzle member having a passage to which spray powder particles are supplied in a wafting state in air and in which the particles are triboelectrified, said nozzle member being provided with powder discharge windows at the peripheral wall of the discharge end of the nozzle, a diffuser member arranged so as to diffuse the powder particles discharged from said windows, vortex air generating means having an annular vortex chamber defined between said diffuser member and said windows, said means injecting vortex air to the powder particles discharged from said windows, the inner wall of said passage of the nozzle member, the peripheral wall of said powder discharge window and the surface of said diffuser member being covered with fluorocarbon resin of low friction coefficient, and said diffuser member being capable of being removed.

4,316,583

DEMOLITION AGENT FOR BRITTLE MATERIALS

Toshio Kawano, Ichihara, and Shiro Ishii, Zushi, both of Japan, assignors to Onoda Cement Company, Ltd., Onoda, Japan

Filed Mar. 18, 1980, Ser. No. 131,537

Claims priority, application Japan, Mar. 20, 1979, 54-31763

Int. Cl.³ B02C *19/00*

U.S. Cl. 241—1 **6 Claims**

1. In a method for demolition which breaks brittle materials by means of the expansive stress generated by the hydration of a demolition agent, the improvement comprising pouring into a hole drilled in the brittle material an aqueous slurry of a demolition agent of pulverized clinker consisting essentially of 24–65% by weight of $3CaO.SiO_2$ crystals, 30–60% by weight of CaO crystalline particles and 5–17% by weight of $CaSO_4$, wherein more than 50% by weight of said CaO crystalline particles are included in said $3CaO.SiO_2$ crystals.

4,316,584

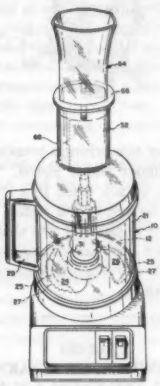
LIQUID DISPENSER FOR FOOD PROCESSOR

Bruno M. Valbona, Hartford County, Conn., assignor to Dynamics Corporation of America, Greenwich, Conn.

Filed Apr. 12, 1979, Ser. No. 29,132

Int. Cl.³ B02C *18/22*

U.S. Cl. 241—38 **7 Claims**



1. A fluid metering dispenser for use in combination with a food processor having a bowl means with a base wall and at least one sidewall extending from said base wall to form an open ended enclosure, rotatable blade means mounted within the confines of said enclosure and a removable cover means adapted to seat on the sidewall at the open end of said enclosure, said cover means including a top wall for extending across the open end of said enclosure, an inlet opening in said top wall and an open ended chute means extending annularly around said inlet opening and outwardly from said top wall away from the enclosure for a predetermined distance to form an enclosed inlet passage leading to said inlet opening, said fluid metering dispenser including a bottom wall having a fluid dispensing opening formed therein and a sidewall shaped to permit only partial insertion of said fluid metering dispenser into said inlet passage, said sidewall having an upper portion with a top open end remote from said bottom wall, said sidewall also having a lower portion with both an internal surface connected to said bottom wall to form a metering chamber which holds a supply of fluid for dispensing from said fluid dispensing opening and an external surface with a stop means for positioning said top open end of said upper portion at a predetermined distance from the open end of said chute means while simultaneously positioning said bottom wall near the open end of said chute means such that an air space of predetermined constant dimension is maintained between said fluid

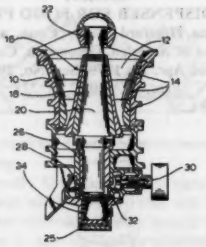
dispensing opening and said inlet opening in said top wall of said cover means to permit the free fall of fluid from said fluid dispensing opening along an unperturbed path to said inlet opening, said stop means having an outwardly extending surface which contacts said chute means after said fluid metering dispenser has been only partially inserted into said inlet passage and which subsequently prevents any further insertion of said fluid metering dispenser into said inlet passage.

4,316,585

GYRATORY CRUSHER

Didier Guzik, Denain, France, assignor to Fives-Cail Babcock, Paris, France

Filed Mar. 17, 1980, Ser. No. 130,864
Claims priority, application France, Mar. 26, 1979, 79 07493
Int. Cl.³ B02C *2/06*
U.S. Cl. 241—211 **5 Claims**



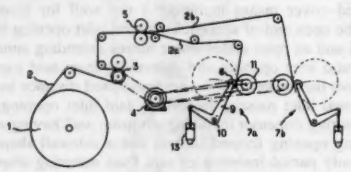
1. A gyratory crusher comprising a breaking head, a hydraulic ram having a cylinder and a piston, the breaking head resting on said piston, a rack fitted in a longitudinal groove formed on the outer surface of the piston, a pinion meshing with the rack and fixed to one end of a shaft going through a wall of the ram cylinder and a sensor coupled to the other end of said shaft, said sensor delivering an electric signal according to the position of the shaft.

4,316,586

PROCESS FOR WINDING, ON A TAKE-UP SHAFT, A SHEET MATERIAL FED FROM A SUPPLY SOURCE

Henri A. Mocco, 95, Ave. Mahieu, 94100 Saint-Maur des Fosses, France

Filed Jul. 21, 1980, Ser. No. 170,708
Claims priority, application France, Jul. 27, 1979, 79 19455
Int. Cl.³ B65H *17/08*
U.S. Cl. 242—65 **6 Claims**



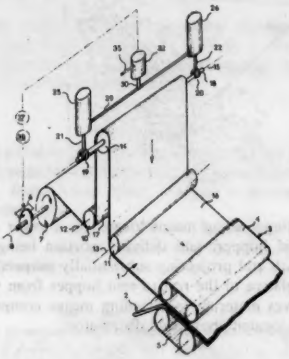
1. A process for winding, on a take-up shaft, a sheet material fed at a selected linear speed from a supply source, which consists in taking up the sheet of material on an idler shaft and driving this take-up shaft by means of a bearing drive cylinder rotating at the selected linear speed of the supply source, wherein linear speed identity between the bearing cylinder and the supply source is obtained by driving the bearing drive cylinder by an adjustable friction means driven at overspeed with respect to the selected linear speed by a motor.

4,316,587

DEVICE FOR REGULATING THE TENSION OF A TRAVELLING WEB

Jean Gauthier, Le Mur Barre, France, assignor to Astin-France Assistance Technique Industrille, France

Filed Jun. 3, 1980, Ser. No. 156,022
Claims priority, application France, Jun. 8, 1979, 79 15211
Int. Cl.³ B65H *59/00, 25/22*
U.S. Cl. 242—75.53 **6 Claims**



1. A device for regulating the tension of a web travelling under the action of traction, comprising spaced guide means over which said web travels and a roller which is free to rotate about its axis arranged transversely with respect to the direction of web travel, the roller being in contact with one side of the web between said guide means and deflecting the web relative to said guide means upstream of the traction means, and the device being characterized by means rotatably supporting said roller for two modes of movement in addition to rotation, namely translational movement toward and away from said guide means in a direction perpendicular to said web and tilting movement about a median transverse axis perpendicular to the axis of rotation of said roller, said supporting means comprising a support supporting the spindle of the roller at each end and allowing a movement of the corresponding end in a direction substantially perpendicular to the web, and means applying to each end, in said direction and towards the web, a predetermined force which is identical from one support to the other and is constant whatever the position of the end during its movement.

4,316,588

FISHING LINE SPOOL HOLDER

Bobby K. Walthall, Arlington, and Sammy E. Harris, Onalaska, both of Tex., assignors to Chaparral Marine Products, Inc., Onalaska, Tex.

Filed May 22, 1980, Ser. No. 152,488
Int. Cl.³ B65H *49/00*
U.S. Cl. 242—129.62 **5 Claims**

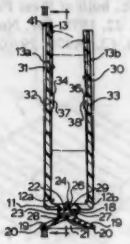
1. A fishing line spool holder used for transferring fishing line to and from a fishing reel and comprising:

(a) A U-shaped frame having a base and two essentially nonparallel, spaced-apart, resiliently flexible upright arms attached on opposite sides to said base and inwardly biased so as to provide sufficient tensile strength to suspend a spool of fishing line between said upright arms and a frictional braking effect against the rotation of said spool;

(b) first and second trunnions, one protruding from each interior wall of said spaced apart upright arms affixed substantially opposite one another along the longitudinal center line of each said interior wall of each said upright arms, and removably and rotatably supporting a spool of fishing line held essentially between them along the center

axis of the spool while preventing any substantial transverse movement of the spool, whereby the spool is able to be rotated and to unwind fishing line in the amount desired;

(c) a suction cup selectively attachable to a fixed object such as the gunwale or seat of a boat;



(d) fastening means connected in firm assembly to said suction cup and to the base of said U-shaped frame whereby said spool holder may be used in situ to transfer fishing line to a reel by a single individual; and

(e) a protuberance positioned at the apex of one of the said spaced apart upright arms through which protuberance a slit is placed so as to permit the fishing line to be locked into said slit when the fishing line is not being used.

4,316,589

SPOOL HUB FOR TAPE CARTRIDGES OR THE LIKE

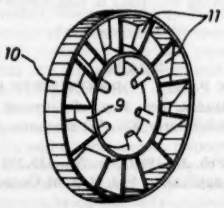
Rolf Stranders, Thalwil, Switzerland, assignor to ICM Cassettes Merchandiser Limited, Buttikon, Switzerland

Filed Oct. 11, 1979, Ser. No. 83,739

Claims priority, application Switzerland, Oct. 16, 1978, 10711/78

Int. Cl.³ G03B *1/04;* G11B *15/32*

U.S. Cl. 242—197 **3 Claims**



1. A spool hub for tape cartridges, especially sound recording tape cartridges provided with slide foils, comprising a hub body which comprises an inner hub ring, an outer hub ring spaced from the inner hub ring, and a multiplicity of successively arranged webs disposed between said inner hub ring and said outer hub ring and forming passages which are angularly spaced about the center of said hub body in such manner as to enhance air circulation in the associated cartridge.

4,316,590

TAPE CASSETTE

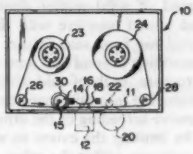
Ken Satoh, Akikawa; Sinichi Saitou, Hachioji; Toshikazu Kato, Hochioji; Seizo Watanabe, Hachioji; Toyoo Nishiyama, Musashimurayama; Misao Shimoda, Hamura; Tutomu Shibata, Hachioji, and Kenji Kimura, Tachikawa, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 25, 1980, Ser. No. 133,816

Claims priority, application Japan, Apr. 2, 1979, 54-39515

Int. Cl.³ G03B *1/04;* G11B *15/32*

U.S. Cl. 242—199 **7 Claims**



1. In a tape cassette comprising a housing, a supply reel hub, a take-up reel hub, a length of magnetic tape which is supplied from said supply reel hub to said take-up reel hub, and a pair of guide rollers located at opposite end portions of said housing and around which said magnetic tape passes from said supply reel hub to said take-up reel hub, a portion of said housing intermediate said guide rollers being provided with an opening through which a magnetic head is placed in contact with one side of said magnetic tape;

the improvement comprising in accordance with the invention:

a rotatable impedance roller mounted to said housing intermediate one of said guide rollers and said opening for receiving a magnetic head, and located to contact the side of said magnetic tape opposite the side which contacts a magnetic head, said guide rollers and impedance roller all contacting the same side of said magnetic tape, said impedance roller being mounted closely upstream of said opening for receiving a magnetic head as viewed from the direction in which the magnetic tape runs from said supply reel hub to said take-up reel hub.

4,316,591

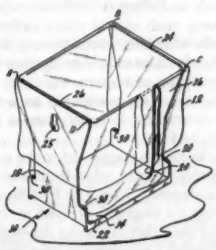
FIXTURE FOR HOLDING BAG

Masao Muraoka, 16210 S. Bo.asallo Ave., Gardena, Calif. 90247

Filed Jan. 21, 1980, Ser. No. 113,973

Int. Cl.³ B65B *67/12*

U.S. Cl. 248—97 **2 Claims**



1. A unitary stackable fixture for holding open a bag, said fixture comprising:

a base extending horizontally;

a pair of arms unitary with said base and cantilevered from said base in upwardly divergent spaced relationship and terminating in upper ends to define a space above said base

and between said arms into which a user places the bag in an upright position;

said base and said pair of arms constituting a structure sufficiently flexible to permit the user to flex the upper ends towards each other from their original positions by application of a modest force to facilitate the user in engaging the bag to the structure by folding the top edge of the bag down over the upper ends of said arms;

the structure being sufficiently elastic that when the user removes the applied modest force the arms spring back to their original positions thereby holding the bag open;

said arms including generally solid walls constructed so as to contain said bag between said arms against substantial outward spread of solid matter deposited in said bag, which spread would interfere with the easy unimpeded removal of said bag from said fixture;

said base not extending beyond said arms to form a stackable U-shaped structure, each of said arms including one or more lugs extending into said space between said arms to prevent excessive spreading of the arms when the fixtures are stacked by limiting the extent to which such stacked fixtures can nest one within the other.

4,316,592

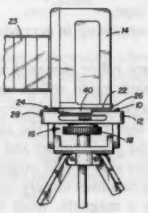
CAMERA-TO-TRIPOD ALIGNMENT HOLDER

Earl A. Jett, 7782 W. Woodard Dr., Lakewood, Colo. 80227

Filed Jun. 20, 1980, Ser. No. 161,264

Int. Cl.³ F16M *11/04*

U.S. Cl. 248—187 **4 Claims**



1. A device for maintaining selected alignment between a camera and a planar tripod platform wherein the camera is of the type having a tripod mounting socket and the tripod platform is of the type carrying a mounting screw engageable in the camera tripod socket, comprising:

a planar body defining a plurality of longitudinally elongated apertures adapted to receive a tripod mounting screw therethrough, wherein said apertures are transversely juxtaposed and mutually substantially parallel;

said planar body including at least two overlapping plates in parallel planes, each of said plates defining a plurality of longitudinally elongated slots therein, wherein said slots of each plate are adapted to overlap slots of the other plate and thereby define said apertures;

a substantially linear rib connected to a first of said two plates and protruding in relief from a first face of said planar body; and

a substantially linear rib connected to the second of said two plates and protruding in relief from a second face of said planar body opposite from the first face thereof, one of said ribs being for engagement with an edge of the tripod platform and the other rib being for engagement with an edge of the camera wherein the longitudinal dimension of said apertures is parallel to the longitudinal dimension of said elongated slots; and wherein said planar body further comprises means for permitting relative sliding motions between said overlapping plates only along the longitudinal axis of the apertures, said plates having substantially equal transverse dimension and unequal longitudinal dimension, said slots in the longitudinally longer plate being of greater longitudinal dimension than the slots in the longitudinally shorter plate.

4,316,593

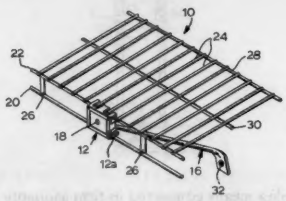
COMBINATION CONNECTING PLATE

Kevin S. Miner, 11794 Inverness Cir., and Abraham Trachtenberg, 167 Forrester Ct., both of West Palm Beach, Fla. 33411

Filed Oct. 22, 1979, Ser. No. 87,579

Int. Cl.³ A47G *29/02*

U.S. Cl. 248—250 **2 Claims**



1. A connecting means for attaching a supporting bracket to shelving, said shelving having different size members, said connecting means comprising:

a plate;

said shelving having at least a first pair of parallel members, a second pair of parallel members and a third pair of parallel members, said second pair of parallel members transversely connectable to said first pair of parallel members and a third pair of parallel members, having a greater distance therebetween than said second pair of parallel members, said third pair of parallel members transversely connectable to said first pair of parallel members;

said plates having a first pair of receiving groove means for receiving said first and second pairs of parallel members and a second receiving groove means for receiving said second and first pairs of parallel members, said first pair of receiving groove means for receiving said first pair of parallel members when said second pair of parallel members is disposed in said second pair of receiving groove means and for receiving said third pair of parallel members when said first pair of parallel members is disposed in said second pair of receiving groove means and said second pair of receiving groove means for receiving said second pair of parallel members when said first pair of parallel members is disposed in said first pair of receiving groove means and for receiving said first pair of parallel members when said third pair of parallel members is disposed in said first pair of receiving groove means, and

a means for fastening said plate to said supporting bracket.

4,316,594

FORMWORK PANEL FOR CONCRETE WALLS

Artur Schwörer, Senden, Fed. Rep. of Germany, assignor to Peri-Werk Artur-Schworer KG, Weissenhorn, Fed. Rep. of Germany

Filed Feb. 27, 1980, Ser. No. 125,270

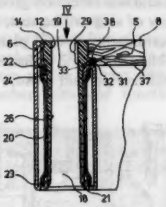
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1979, 2908284

Int. Cl.³ E04G *11/00*

U.S. Cl. 249—18 **17 Claims**

1. A form for concrete construction, comprising a sheet like panel having a front face and a rear face mounted on a supporting frame, said form having a plurality of openings extending through the panel and frame perpendicularly to the front face, a bushing secured within at least one of said openings, said bushings comprising a unitary tubular plastic member having a conically tapered inner bore, the surface of which is continu-

ous and substantially smooth, said bushing having a length corresponding substantially to the thickness of said form and



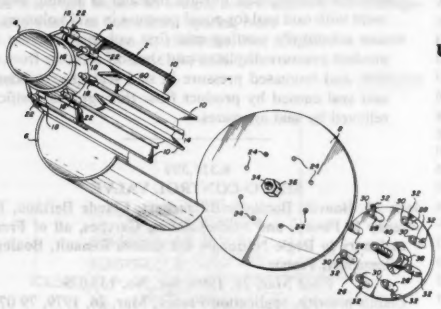
having one end lying substantially in the plane of the front face of said panel.

4,316,595

CONCRETE POST FORMING APPARATUS

Ronald M. Wheeler, and Joan L. Muirhead, both of Vicksburg, Miss., assignors to Ronald M. Wheeler, Vicksburg, Miss.

Filed Oct. 27, 1980, Ser. No. 201,229
Int. Cl.³ B22D *5/00*
U.S. Cl. 249—94 **10 Claims**



1. Molding apparatus for forming a plurality of reinforced concrete posts, comprising

(a) housing means (**2**), including

(**1**) a fixed horizontal first plate (**8**);

(a) a vertically arranged central cylindrical pipe (**4**) supported at its lower end on said first plate;

(**3**) an outer cylindrical sleeve (**6**) arranged in concentrically spaced relation about said pipe and supported at its lower end on said first plate, thereby to define an annular chamber between said pipe and said sleeve;

(**4**) a plurality of circumferentially spaced radial fin members (**10**) connected with said pipe for dividing said chamber into a plurality of circumferentially arranged vertical compartments;

(**5**) said first plate containing a plurality of openings (**24**) arranged circumferentially in equally spaced relation opposite said compartments, respectively;

(b) means for suspending a plurality of reinforcing rods in spaced relation within each of said compartments, respectively, the rods being adapted to extend vertically through each of said compartments and said first plate openings, respectively, said suspension means including

(**1**) an annular ring (**16**) connected with the upper portion of said pipe adajcent the upper extremity of said sleeve; and

(**2**) a plurality of first chuck means (**18**) connected with said ring and arranged opposite said compartments adapted for gripping the upper portions of the rods, respectively; and

(c) tension means adapted for tensioning the reinforcing rods, comprising

(**1**) a horizontal second plate (**26**) arranged beneath said first plate;

(**2**) clamping means (**28**) adapted for clamping the lower ends of the rods to said second plate, respectively; and

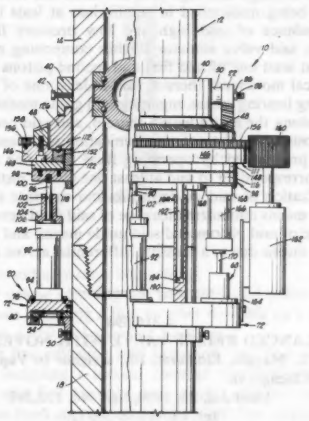
(**3**) means for displacing said second plate downwardly relative to said first plate, whereby when a plurality of reinforcing rods are suspended in said compartments by said suspension means and tensioned by said tension means, and when concrete is delivered to said compartments, a plurality of reinforced concrete posts are simultaneously cast.

4,316,596

POWER ACTUATED VALVE

Hubert D. Krober, P.O. Box 338, Cheyenne, Okla. 73628, and Thomas Kelly, 1729 Westminster Pl., Oklahoma City, Okla. 73120

Filed Apr. 2, 1979, Ser. No. 26,340
Int. Cl.³ F16K *31/122, 31/53*
U.S. Cl. 251—58 **21 Claims**



1. An actuator for a valve, said valve including a valve body having a valve member disposed in said valve body with a first gear attached to said valve member, said actuator comprising:

a second gear means for drivingly engaging said first gear to operate said valve;

moving means for selectively moving said second gear means into and out of engagement with said first gear;

power means for driving said second gear means;

support member means constructed for attachment to said valve body;

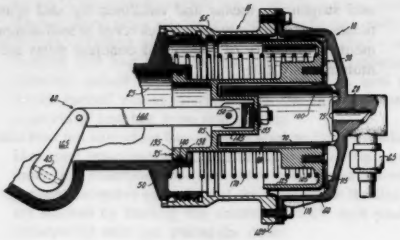
first frame means, rotatingly connected to said support member means so that said valve body may rotate relative to said frame means, said frame means also being attached to said moving means; and

locking means for selectively locking said frame means to said support member means prior to operating said valve to prevent said support member means from rotating relative to said frame means.

4,316,597
COMPACT VALVE ACTUATOR

Robert B. Goodman, West Hartford, and Charles C. Seger, West Suffield, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jan. 24, 1980, Ser. No. 115,304
Int. Cl.[3] F16K *31/122*
U.S. Cl. 251—58 11 Claims



1. Valve actuator comprising means adapted to operatively connect said actuator to an actuated valve, a housing having high and low pressure operating fluid inlets thereto, first and second pistons disposed in said housing and adapted to drive said connecting means; said first piston pressurized by low pressure fluid admitted to said housing through said low pressure inlet; said second piston being movable with said first piston and pressurized by high pressure fluid admitted to said actuator through said high pressure inlet, said first and second pistons being maintained in equilibrium at least in part by a force balance of said high and low pressure fluids acting thereon; said valve actuator further comprising means along which at least one of said first and second pistons is guided in reciprocal movement thereof, said at least one of said pistons including bearing means engaging said guide means, said guide means along the entire length thereof, and said bearing means on opposite sides thereof communicating with, and being uniformly pressurized by operating fluid from one of the fluid inlets corresponding to said at least one of said pistons uniform pressurization of said guide means and opposite sides of said bearing means minimizing leakage of said fluid between said at least one of said pistons and said guide means, and around said bearing means due to a pressure differential across said bearing means.

4,316,598
BALANCED RELIEF VALVE WITH NOVEL SEAL

Robert L. Maggio, Elmhurst, Ill., assignor to Vapor Corporation, Chicago, Ill.

Filed Jul. 25, 1980, Ser. No. 172,399
Int. Cl.[3] F16K *31/122*
U.S. Cl. 251—63 4 Claims

1. A pilot operated pressure relief valve having a housing, a reciprocating shut-off member in said housing defining first and second pressurized volumes above and below the shut-off member, respectively, comprising;

a first aperture communicating with said first volume;

second aperture communicating with said second volume, and defining an orifice;

an orifice insert concentric with said orifice, and an orifice seat secured to said housing, said orifice insert mounted on said orifice seat, said orifice insert and said orifice seat defining first and second sides, respectively, of a seal retention groove;

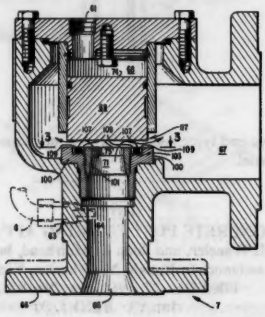
said orifice insert and said orifice seat defining a planar surface facing said shut-off member;

a seal in said goove, said seal and said groove defining a valve seat for said shut-off member;

a first plurality of apertures communicating with said first side of said seal retention groove in spaced relationship in the periphery of said orifice insert, said first plurality of apertures terminating in said planar surface and communicating with said second volume;

a second plurality of apertures communicating with the second side of said seal retention groove in spaced relation in the periphery of said orifice seat, said second plurality of apertures terminating in said planar surface and communicating with said second volume;

means seating said seal on said closure member;



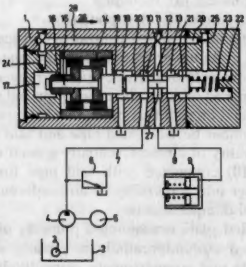
means maintaining said closure member in sealing engagement with said seal for equal pressure in said volumes; and

means selectively venting said first volume, wherein said product pressure displaces said shut-off member from said seat, and increased pressure in said seal groove beneath said seal caused by product flow through said orifice is relieved by said apertures.

4,316,599
SERVO-CONTROL VALVE

Jean M. Bouvet, Boulogne-Billancourt; Claude Berthou, Fontenay le Fleury, and Michel Jallas, Garches, all of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Mar. 24, 1980, Ser. No. 133,079
Claims priority, application France, Mar. 26, 1979, 79 07577
Int. Cl.[3] F15B *13/044*
U.S. Cl. 251—129 5 Claims



1. A hydraulic servo-control valve comprising:

a polarized electromagnet adapted for connection to an electric current source and having a movable shaft with a first plunger member on one end thereof and a second plunger member on the second end thereof and responsive to electric current of one polarity from the source for urging said shaft, said first plunger member and said second plunger member to move in a first direction and to electric current of opposite polarity for urging said shaft, said first plunger member and said second plunger member to move in the opposite direction;

a slide member with a third plunger member on one end thereof and a fourth plunger member on the second end thereof, said first plunger member and said fourth plunger member being of different cross-sections; and

means defining a housing having:

(a) a first chamber with said first plunger member therein;

(b) a second chamber with said second and third plunger members therein and in contact with each other;

(c) a third chamber with said fourth plunger member therein;

(d) said slide member aligned with said movable shaft;

(e) spring means acting to oppose movement of said shaft and said slide members in the direction of the smaller cross-section plunger;

(f) an inlet adapted for connection to a source of hydraulic fluid;

(g) an outlet adapted for connection to a utilizer of pressurized hydraulic fluid; and

(h) a plurality of conduits interconnecting said chambers, said inlet, and said outlet, for flow of hydraulic fluid therebetween, and subjecting said outlet to the hydraulic fluid pressure of said first and third chambers while substantially isolating said second chamber therefrom.

4,316,600

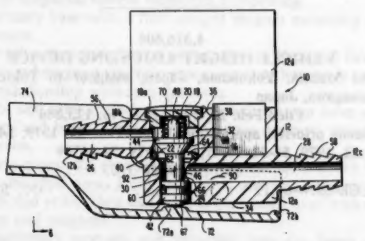
FAST ACTING, NONREPAIRABLE PLASTIC ON/OFF VALVE

Carl Parise, and Rainer R. Schulz, both of Sparks, Nev., assignors to Parise & Sons, Inc., Sparks, Nev.

Filed Jun. 4, 1980, Ser. No. 156,240

Int. Cl.³ F16K *1/34*

U.S. Cl. 251—245 **7 Claims**



1. A fast acting on/off valve comprising:

a molded plastic valve body, said including offset, parallel inlet and outlet passages extending partially through said body from opposite ends thereof,

a transverse flow passage intersecting said parallel inlet and outlet passages, said transverse flow passage passing through said valve body and being comprised of a bore intersecting said outlet passage and a counterbore intersecting said inlet passage, with said counterbore defining with said bore a radial shoulder intermediate of said inlet and outlet passages,

a spring biased valve plunger slidably mounted within said bore and including a portion closing off said bore and said counterbore at said radial shoulder,

the improvement wherein:

said valve plunger comprises a spool type valve member including a first land at one end thereof slidably and sealably mounted within said bore and partially projectable externally of said valve body and a second land at the opposite end thereof having a diameter in excess of the diameter of said bore but less than the diameter of said counterbore and including a conical valve contact face on the side facing said first land, an O-ring seal valve seat positioned within said counterbore against said radial shoulder and engageable by said conical valve contact face of said second land to provide a high integrity seal between said inlet and said outlet passages when said valve plunger is in said valve closed position under the spring bias of said biasing means and under the pressure of the fluid in said inlet passage, the edge of said bore at the radial shoulder being chamfered to form a conical surface at the same angle as the conical valve contact face of said second land, and wherein said first land comprises a peripheral recess, and said peripheral recess bears an O-ring sealing member whose outer diameter is slightly in excess of the diameter of said bore, and said O-ring sealing member is of a thickness in excess of the depth of said peripheral recess so as to provide a high pressure resilient seal between said valve plunger and said bore.

4,316,601

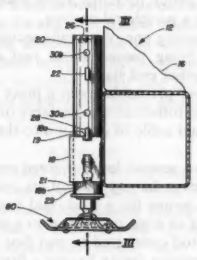
QUICK-ADJUSTING JACKSTAND APPARATUS

Donald L. Osborne, Quarryville, and Joe E. Shriver, New Holland, both of Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Dec. 8, 1980, Ser. No. 214,059

Int. Cl.² B60S *9/02*

U.S. Cl. 254—86 R **7 Claims**



1. A jackstand apparatus comprising:

means for coarse adjusting said jackstand, said coarse adjusting means including a first member movable on a support between a first and a second position;

means for fine adjusting said jackstand, said fine adjusting means including a second member threadably engaged within said first member, said second member being extendable from and retractable into said first member;

a supportive base;

means for rotating said second member relative to said first member and relative to said base, said rotating means including a grip member connected to and protruding from said second member and further including a rounded portion received by said base;

a first pair of ears connected adjacent a first end of said first member, said first ears protruding radially outwardly from said first member in opposite directions;

a second pair of ears connected adjacent a second end of said first member, said second ears protruding radially outwardly from said first member in opposite directions and being aligned with said first ears;

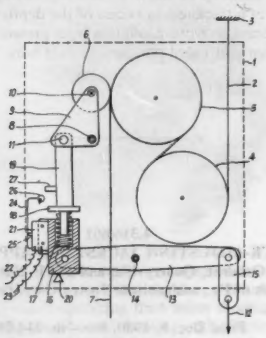
said support has a pair of opposed notches formed therein, said notches being of a construction sufficient for receiving a pair of ears; and

said support includes a locking member, said locking member being resiliently urged into engagement with said first member.

4,316,602
DEVICE FOR PRESSING A CABLE AGAINST THE BOTTOM OF A PULLEY GROOVE

Andre Desplats, Boulogne Billancourt, France, assignor to Tractel S.A., France

Filed Aug. 22, 1979, Ser. No. 68,812
Claims priority, application France, Jun. 1, 1979, 79 14188
Int. Cl.³ B66D *1/48, 1/58*
U.S. Cl. 254—270 **4 Claims**



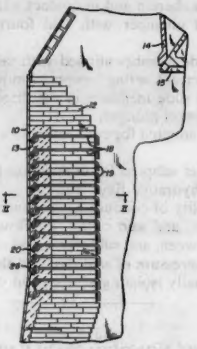
1. A hoisting apparatus comprising:
(i) a support
(ii) a driving pulley rotatable about a pivot on said support and having a peripheral groove
(iii) a cable having one of its ends secured to an anchorage point and being passed about said driving pulley and having its other end slack
(iv) a first lever pivotable about a pivot on said support
(v) at least one roller carried rotatably on said first lever and engaging said cable to press it into the peripheral groove thereof
(vi) a two-arm second lever pivoted on said support, said two arm lever having one of its arms connected to a suspension means for a load, said two-arm lever having the other of its arms connected to a strap,
(vii) a thrust rod connected to said first lever
(viii) a compression spring having a first end acting on said strap and a second end acting on said thrust rod, and
(ix) a stop on said support against which said strap is urged by said compression spring when said second lever is under no-load or low-load condition,
whereby under no-load and low-load condition said compression spring acts through said thrust rod and first lever to urge said at least one roller to press said cable into the peripheral groove of the driving pulley, and under greater load condition said second lever is moved to move said strap away from said stop and compress said spring so as to transmit to said at least one roller a cable pressing force which increases with the load applied.

4,316,603
STOCKLINE ARMOR CONSTRUCTION FOR BLAST FURNACES

Howard W. Steffen, Peters Township, Washington County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 81,725, Oct. 4, 1979, abandoned. This application Sep. 15, 1980, Ser. No. 187,293
Int. Cl.³ C21B *7/08*
U.S. Cl. 266—282 **4 Claims**

1. In a blast furnace, said furnace including a shell, courses of brickwork forming a lining within said shell, and stockline armor apparatus for protecting said brickwork, said apparatus including rows of plates adapted to be placed over each course of brickwork in an area susceptible to being struck by material charged to the furnace, said plates extending longitudinally in a radial direction inward from said shell and having flanges for overlying the otherwise exposed face of said brickwork, and anchoring means for holding said plates in position in the furnace, said anchoring means permitting some vertical movement of the plates as well as pivotal movement about a horizontal axis,
the improvement in said apparatus which comprises:

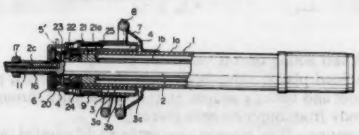


said plates each having a downward depending tongue adjacent the end thereof near said shell, said tongue being of length sufficient to abut said shell when said refractory beneath the plates erodes away and said plates therefore start to pivot downward about said horizontal axis, so as to limit the extent of pivotal movement of said plates and thus protect the furnace shell from overheating.

4,316,604
VEHICLE HEIGHT ADJUSTING DEVICE

Naoki Makita, Yokohama, Japan, assignor to Tokico Ltd., Kanagawa, Japan

Filed Feb. 22, 1980, Ser. No. 123,884
Claims priority, application Japan, Feb. 22, 1979, 54-21989; Feb. 22, 1979, 54-21990; Apr. 9, 1979, 54-46709
Int. Cl.³ F16F *3/07*
U.S. Cl. 267—64.19 **5 Claims**



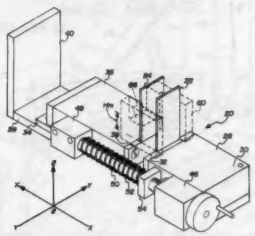
1. A vehicle height adjusting device comprising:
a tubular main body;
a piston rod slidably mounted within said main body and having an end projecting therefrom, said projecting end of said piston rod having an outwardly facing annular shoulder;
an air spring unit including a resilient flexible tubular wall member having an inner wall portion and an outer wall portion closed at one end by a rolling wall portion formed of said inner and outer wall portions on relative reciprocation therebetween, said inner wall portion being sealingly connected to and surrounding said main body;
a member abutting said shoulder and having an annular surface;
a generally cup-shaped member mounted on said projecting end of said piston rod and abutting said member, said outer wall portion being sealingly secured to said cup-shaped member; and
means for supplying pressurized gas into a space defined between said inner and outer wall portions of said air

spring unit, said means comprising an axial bore formed in said piston rod, an axially extending groove formed in the outer circumference of said piston rod and extending to said shoulder, a radial bore extending from said axial bore and opening into said axial groove, and at least one radially extending groove extending along said annular surface of said member.

4,316,605
MAGNET MOUNTING TOOL

Clyde L. Zachry, Poway, and William C. McCutchen, San Diego, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Dec. 26, 1979, Ser. No. 107,168
Int. Cl.³ H01F *41/02*
U.S. Cl. 269—43 **6 Claims**



1. A tool for mounting bias magnets in a yoke in the manufacture of magnetic bubble memories comprising:

a stationary base with a first upright magnet mounting arm thereon,

a moveable base coupled to said stationary base and having a second magnetic upright mounting arm thereon in parallel relationship with said first arm,

both of said arms including surfaces facing away from each other and being adapted to have bias magnets mounted thereon,

a spring means for separating said arms so as to move said bias magnets away from each other and into engagement with said yoke when said yoke is positioned over both said arms and magnets,

said stationary base and said moveable base also being provided with supporting means for supporting a threaded bolt, and

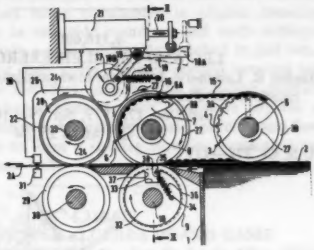
means responsive to rotation of said bolt for varying the force with which said spring presses said magnets against said yoke.

4,316,606
APPARATUS FOR SEPARATING AND EXTRACTING STACKED SHEETS ONE BY ONE

Henri Buys, Breux Jouy, and Camille Carisey, Creteil, both of France, assignors to Societe Anonyme dite: Transaccompagnie pour le Developpement des Transactions Automatiques, Paris, France

Filed Apr. 8, 1980, Ser. No. 138,302
Claims priority, application France, Apr. 10, 1979, 79 09035
Int. Cl.³ B65H *3/52*
U.S. Cl. 271—10 **7 Claims**

1. Apparatus for feeding sheets one by one in a predetermined direction from a stack of sheets, the apparatus including a magazine for holding a stack of sheets; a first shaft rotatably mounted adjacent to the dispensing side of said magazine; a first roller mounted in free-wheeling relation on said first shaft for frictionally engaging an exposed surface of a first sheet in the magazine; a second shaft rotatably mounted parallel to and downstream in the sheet feeding direction from the first shaft; a second roller mounted in free-wheeling relation on said second shaft for frictionally engaging the same surface of a sheet fed from the magazine by the first roller; first drive means for rotating said first and second shafts in the free-wheeling direction of the first and second rollers to feed a sheet from the first roller towards the second roller; retard means positioned in closely spaced relation to the second roller such that a fed sheet passes between and in contact with the second roller and the retard means for stripping away any sheet stuck to the first sheet; and second drive means positioned downstream from the second roller further feeding each sheet delivered from the second roller, wherein said retard means comprises:



a third roller mounted for rotation about a third axis parallel to the axis of rotation of the second shaft, said third roller having a peripheral surface for frictionally contacting the surface of a fed sheet opposite from said exposed surface;

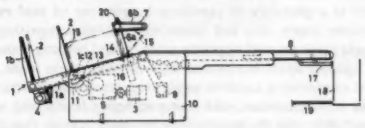
means for limiting the angular rotation of said third roller in the sheet feeding direction from an initial position when engaged by a sheet being fed by the second roller; and

biasing means for rotatably urging said third roller in the reverse direction toward said initial position.

4,316,607
PAPERBOARD FEEDING APPARATUS

Masaharu Hayashi, Omiya, and Kouichi Ueda, Iwatsuki, both of Japan, assignors to Kabushiki Kaisha Tomoku, Otaru, Japan

Filed Mar. 7, 1980, Ser. No. 127,965
Claims priority, application Japan, Mar. 12, 1979, 54-30441[U]
Int. Cl.³ B65H *1/14*
U.S. Cl. 271—151 **1 Claim**



1. A cardboard feeding machine of the type having a tiltable lift (1), a lifting yoke (2) provided on the lift (1), driven conveyer belt provided ahead of the tiltable lift (1), said tiltable lift and said lifting yoke being arranged for operation by respective electric motors (3), (4), and there being provided a further belt (7) for forwardly bringing down stacked cardboard (15) over the forward end side of the tiltable lift (1), wherein: each of said motors (3), (4) is defined by a pole change motor and the motor (3) for tilting said tiltable lift (1) being so arranged as to be first rotatable at high speed and then changeable for rotation at a low speed, while being applied with regenerative braking, by changing the number of poles thereof and being stopped, circuit means including limit switches responsive to the tilted position of said tiltable lift for causing said changing of the number of poles of the tiltable lift pole change motor, said motor (4) driving the lift yoke (2) being so arranged as to first rotate at a high speed and then be changed to rotate at a low speed and thereafter being stopped when a forward end of

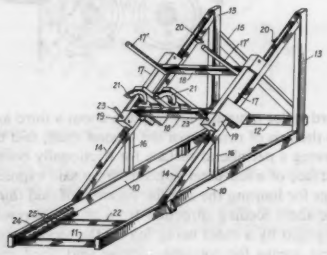
the stacked cardboards (15) being conveyed at that low speed reaches the further belt (7), while being applied with regenerative braking, by changing the number of the poles, and being arranged to again continuously rotate at said lower speed enabling one or more of the stacked cardboards (15) to be advanced by the belt (7) one after another continuously, being conveyed in a forward direction by the conveyor belt (8) and further circuit means including limit switches responsive to the position of stacked cardboard conveyed by said lifting yoke for causing said changing of the number of poles of the lifting yoke pole change motor.

4,316,608

LEG AND HIP SLED EXERCISER

Duane R. Lundberg, Jefferson, Iowa, assignor to AMF Incorporated, White Plains, N.Y.

Filed Dec. 17, 1979, Ser. No. 104,530
Int. Cl.³ A63B *23/04*
U.S. Cl. 272—117 **1 Claim**



1. In an exerciser having a generally rectangular shaped open bottom frame having spaced apart side and end members, spaced upwardly sloped side frames on said bottom frame, and a weighted carriage movable along said side frames, a pair of spaced cradles on said carriage, said cradles being adapted to nest the shoulders of a user of said exerciser standing inside said open bottom frame adjacent one end thereof corresponding to the lower end of said sloped side frames, a foot rest at said one end of said bottom frame, said foot rest being adapted to brace the exercise user's toes when leaning forward to lift said carriage, means for adjustably positioning and locking said foot rest in a plurality of positions lengthwise of said end of said bottom frame, said last mentioned means comprising a pair of angle irons on said opposite sides of said bottom frame, a series of spaced apart horizontal lugs on said angle irons, said foot rest comprising another angle iron transversely spanning said pair of angle irons, said foot rest being freely and selectively insertable into the spaces between said lugs so that the corner thereof overlies one of said lugs and the edges thereof underlies the two lugs immediately adjacent thereto on each of said pair of angle irons.

4,316,609

BENCH MOUNTED WEIGHT LIFTING EXERCISER

Ira J. Silberman, Opelika, Ala., assignor to Diversified Products Corporation, Opelika, Ala.

Filed Feb. 15, 1979, Ser. No. 12,487
Int. Cl.³ A63B *21/06*
U.S. Cl. 272—118 **7 Claims**

1. An exercising apparatus comprising:

(a) a bench having:

(1) an elongated bench frame;

(2) a fixed seat portion supported on said bench frame at the foot end of said bench;

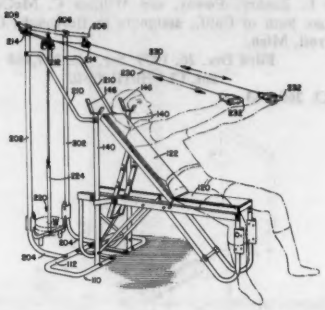
(3) an adjustable incline seat portion hinged to said bench frame adjacent to said fixed portion and extending to the head end of said bench;

(4) means for adjustably supporting said incline portion on said bench frame at a desired angle of inclination; and

(5) a pair of upstanding, spaced barbell supports on opposite sides of said bench attached to said bench frame, each of said tubes having a barbell cradle at its upper end above said incline seat portion; and

(b) a weight pull device at the head end of said bench attached to and supported by said bench frame having:

(1) a pair of upstanding parallel guides attached to said bench frame;



(2) a top crosspiece interconnecting the upper ends of said guides;

(3) weight-supporting means slidably guided along said guides;

(4) weight pulley means connected to said top crosspiece; and

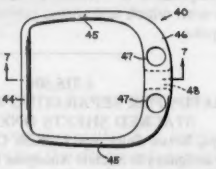
(5) at least one tension element connected to said weight-supporting means and trained through said pulley means to be pulled by a user lying or sitting on said bench.

4,316,610

SEGMENTED ELASTIC CABLE EXERCISER BAR

Robert S. Hinds, 1803 Regent St., Madison, Wis. 53705

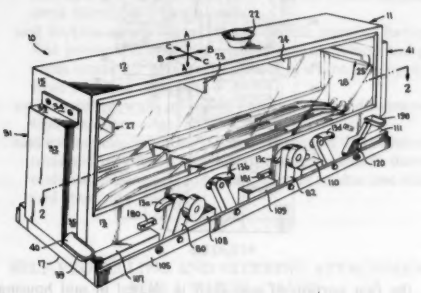
Continuation-in-part of Ser. No. 755,552, Dec. 30, 1976, Pat. No. 4,195,835. This application Nov. 19, 1979, Ser. No. 95,664
Int. Cl.³ A63B *21/02*
U.S. Cl. 272—137 **4 Claims**



1. In exercise apparatus having an elastic cable for being attached to a laterally extending bar and providing downwardly extending runs of cable at each end, an improvement comprising pieces shorter in length than said bar joined to be separable and end-abutting to provide an assembled bar of lever-like rigidity and elongated configuration for being gripped by both hands of a user and having a longitudinally grooved upper surface for receiving said cable between points of terminal contact of said cable with said bar, and having bifurcated ends formed by finger-like members which extend from the two opposite sides to beyond the ends of said groove, said bifurcated ends being adapted to receive downward runs of cable therein and to receive convolutions of said cable thereon upon rotation of said bar with said cable engaged

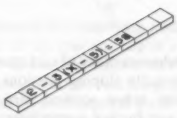
thereon, said pieces being coupled by locking pins and a pair of sleeves, each sleeve of said pair of sleeves being anchored in one of the two said pieces disposed to be end abutting, said locking pin embodying a detent which comprises means for being resiliently biased transversely to the axial direction of the locking pin and urged beyond the projected interface of said locking pin and an associated sleeve to maintain said pieces firmly abutting during exercise use of said bar and enabling manual disassembly of said bar to provide said pieces severally for rendering said exercise apparatus compactly transportable.

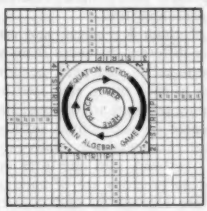
4,316,611
COMPETITION GAME MACHINE
W. Fred Stokes, Rte. 2, Branchville, S.C. 29432; Fairey S. Bradford, 909 4th Ave., Kingstree, S.C. 29556, and Nancy S. Strobel, 901 Wisteria Dr., Florence, S.C. 29501
Filed Jun. 20, 1980, Ser. No. 161,450
Int. Cl.[3] A63F *7/06, 7/14*
U.S. Cl. 273—85 D **11 Claims**



1. A competition game machine which comprises,
(a) an elongated housing formed by a cover member, two side members, two end members and a bottom member, said side members including openings therein in which are mounted window elements, each of said side members including at least two cresecent-shaped slots therein, the crescent-shaped slots in one side member being aligned with the crescent-shaped slots in the other side member, said side members also including additional openings therein in the lower sides thereof, at least one of which is located below each of said crescent-shaped slots, each of said end members including an opening in the upper portion thereof which is sufficiently sized to allow a game ball to pass therethrough,
(b) identical game ball return means mounted on the outer sides of each respective end member and capable of receiving a game ball passing through the opening in the respective end member,
(c) a floor means positioned in said housing to form a playing deck above said bottom member, said floor means including multiple spaces therein which each extend from one end member of the housing to the other end and are spaced apart between the side members,
(d) separate identical projector elements positioned near the two housing end members, each projector element including a rotatable projector shaft which extends between the housing side members and respectively through aligned holes therein, a handle means fixedly attached to one end of said rotatable projector shaft so as to be located outside said housing and capable of rotating said rotatable projector shaft, and a projector hub fixedly attached to said rotatable projector shaft along a center portion between said housing side members, said projector hub including multiple identically-shaped projector arms with head portions which are capable of retaining and, when said rotatable projector shaft is rotated, projecting a game ball towards the opposite housing end member, the handle means of each respective projector element being located on the outer side of an opposite side member, and the projector arms with head portions being capable of moving within and above different said spaces in said floor means, and
(e) at least two separate and identical activator elements, each activator element including a yoke having two arms and a cross bar connecting first ends of said arms, said cross bar being rotatably mounted between the housing side members, the second ends of said arms including aligned bores through which extends a rotatable activator shaft having an enlarged end portion, each said rotatable activator shaft being translatable in aligned crescent-shaped slots in said side members, and each activator element including a fin hub fixedly attached to said rotatable activator shaft along a center portion between said housing side members, said fin hub including multiple identically shaped plate-like fins which are capable of moving within and above different said spaces in said floor means so as to form a striking face for contacting and moving a game ball.

4,316,612
EDUCATIONAL ALGEBRA BOARD GAME
Kenneth J. Harder, 113 Ninth St., Bay St. Louis, Miss. 39520
Filed Mar. 14, 1980, Ser. No. 130,232
Int. Cl.[3] A63F *3/00*
U.S. Cl. 273—272 **5 Claims**





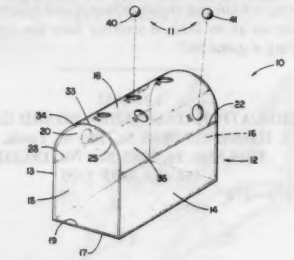
1. An educational algebra game article comprising a generally square game board, a plurality of strips each having printed thereon an equation or inequality to be solved, and a plurality of markers having printed thereon portions of equations or inequalities, said portions being so related to respective ones of said strip equations or inequalities that selected ones of said markers can be assembled to form a successive series of equations or inequalities the last of which constitutes a solution for the related strip equation or inequality, said board including demarcated areas adjacent each side thereof for receiving one of said strips and an adjacent assembly of said markers.

4,316,613
SKILL MARBLE GAME
Virgil W. Harris, R.R. 17, Box 245, Brazil, Ind. 47834
Filed Jul. 21, 1980, Ser. No. 170,909
Int. Cl.[3] A63B *63/08*
U.S. Cl. 273—401 **7 Claims**

4. A game of skill comprising:
a plurality of spheres of equal diameter; and

a closed container with a bottom wall configured to support said container upon a flat surface, said container including a top wall with an aperture, said aperture has a size larger than said equal diameters of said spheres allowing said spheres to pass through said aperture into said container when dropped one at a time from a position over said aperture, said top wall including an inwardly facing concave surface guiding said spheres when positioned inside said container to roll toward said aperture as said container is inverted; and wherein

said top wall includes an outwardly facing convex surface part forming a peak portion and part forming downwardly sloping portions extending from said peak portion, said top wall includes a plurality of apertures extending therethrough all having a diameter greater than said spheres with some of said apertures being located on said peak portion and appearing circular when viewed directly



overhead whereas other of said apertures being located on said downwardly sloping portions appearing elliptical in configuration when viewed directly overhead of said container; and further comprising: indicia means on said container operably indicating a preselected scoring value assigned to each aperture.

5. The game of claim 4 wherein said convex surface has different slopes at different distances from said peak portion, some of said apertures on said peak portion are of different diameters relative to each other, said apertures of one of said downwardly sloping portions are of equal size relative to each other and are located on said convex surface at said different distances to appear of unequal size relative to each other when viewed directly overhead, said apertures on another of said downwardly sloping portions are of unequal size relative to each other and are located on said convex surface at said different distances to appear to be of equal size relative to each other when viewed directly overhead.

4,316,614

HOLDING CHUCK

Robert T. Clopton, Can Mer, Ky., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jan. 7, 1980, Ser. No. 109,953
Int. Cl.³ B23B *31/18;* B23F *23/06*
U.S. Cl. 279—1 G **5 Claims**

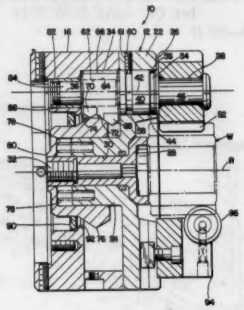
1. A holding chuck for releasably positioning and holding a workpiece relative to an established reference line, said chuck comprising:

a housing including an end face extending substantially perpendicular to said reference line, a plurality of substantially identical first bores formed in said housing and opening to said end face, the axes of said bores being substantially parallel to said reference line and equally circumferentially and radially spaced relative to said reference line, a plurality of second bores extending radially inwardly from the exterior of said housing to intersect said first bores;

a shaft received in each of said first bores, each of said shafts having a first portion removably retained in said first bore for rotation about the axis of said first bore relative to said housing, each of said shafts having a second portion extending axially out from said first bores beyond said end face, each of said first portions of said shafts having a groove formed in the exterior surface thereof;

a pin member adjustably positioned in each of said second bores, each of said pin members having a first position wherein an end thereof extends into said first bore for receipt in said groove in one of said shafts to control the axial position of said shafts relative to said housing and a second position wherein said end is retracted from said grooves;

a jaw member defining a workpiece engaging surface fixed to the second portion of each shaft, each of said surfaces rotating about an axis offset the axis of the first bore receiving the shaft to which the jaw member is fixed when



the first portion of said shaft is rotated in said housing about said axis of said first bore whereby such rotation of said first portions will cause said surfaces to move radially inwardly and outwardly with respect to said reference line; and

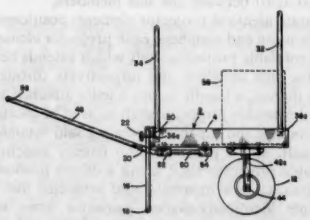
means located within said housing for selectively rotating said first portions of said shafts simultaneously and in the same direction of rotation, said means including a single driving member and a separate driven member for each shaft, each driven member defining a bore having internal splines concentric with the axis of one of said bores, movement of said driving member resulting in an equal rotational movement of each of said driven members, each of said shafts having an externally splined portion for engagement with the internally splined portion of said driven members.

4,316,615

PICNIC BEACH CART

Norval K. Willette, 4 Laurie La., Burlington, Mass. 01803

Filed Jun. 13, 1980, Ser. No. 159,189
Int. Cl.³ B62B *1/12*
U.S. Cl. 280—47.26 **3 Claims**



1. A beach cart including

first and second wheels each having an axle and an annular rim tread surface of substantial width in a circular plane parallel with the longitudinal axis of its axle,

a horizontal flat bed having upwardly-extending peripheral side walls,

means independently mounting said wheels on the underside of said bed near opposite sides thereof and arranged to support said bed at a distance between nine and eighteen inches above the lowest surface of said wheels, said axles being positioned along a line within ten inches from a vertical plane passing through the rear edge of said bed,

a support stanchion,

means rotatably securing said stanchion to the front of said bed,

releasable locking means arranged to secure said stanchion in its vertical position whereby said bed is supported by a tripod formed by said stanchion and said wheels,

a towing bar removably secured to said bed, and

a fixed stop member secured to said bed and positioned to abut said stanchion and thereby limit the rotational movement thereof in a first direction,

said locking means including a rotatable member having a first position in which it engages said stanchion and prevents rotational movement thereof in a direction opposite from said first direction,

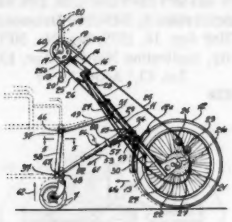
one of said sidewalls including a slot extending downwardly from its upper edge, and

said rotatable member including an extension that, when said rotatable member is in its first position, extends through said slot and projects forwardly thereof to abut one side of said stanchion.

4,316,616
SELF-PROPELLING AND STEERING ATTACHMENT FOR A WHEEL-CHAIR

Bernard Boivin, 1689 Sanguinet St., Montreal, Canada H2X 3G5

Filed Feb. 25, 1980, Ser. No. 124,528
Int. Cl.³ B62M 1/14
U.S. Cl. 280—289 WC **9 Claims**

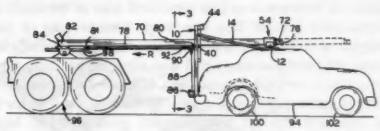


1. A self-propelling and steering attachment for a wheel-chair of the type having a frame, rear larger diameter wheels supporting said frame and front smaller diameter swivel wheels supporting said frame at the front frame portion thereof, said attachment comprising a front sleeve, a steering post rotatably supported in said sleeve, a ground-engaging steering and propelling wheel carried by the bottom of said steering post, drive means for said steering and propelling wheel, a rear framework, means on said framework to rigidly connect and disconnect the same to and from the front frame portion of said wheel-chair, and two superposed bars extending longitudinally forwardly from said rear framework and interconnecting the latter and said sleeve, one of said bars being extensible and retractable and pivotally connected to said rear framework and to said sleeve for pivotal movement about horizontal transverse axes relative to said wheel-chair, and the other of said bars being rigidly secured to one of said framework and of said sleeve and pivotally connected to the other of said framework and of said sleeve for pivotal movement about a horizontal transverse axis relative to said wheel-chair, and means to lock said extensible and retractable bar to an adjusted length, whereby a wheel-chair user, while seated in the wheel-chair, can secure said framework to said wheel-chair front frame portion when said locking means are in released position and while said front swivel wheels of the wheel-chair rest on a support surface, and then the user can lift said swivel wheels off the ground by pushing forwardly of said steering post to cause the same to take more vertical attitude, thereby causing a change of length of said extensible and retractable bar and then locking the latter in its final position with the swivel wheels remaining raised off the supporting surface and the wheel-chair resting on said supporting surface only by the rear large diameter wheels and the steering and propelling wheel.

4,316,617
VEHICLE TOWING APPARATUS

Ronald C. Flaugh, 407 N. Main St., Churubusco, Ind. 46725

Filed Sep. 8, 1980, Ser. No. 184,934
Int. Cl.³ B60D 1/14
U.S. Cl. 280—402 **9 Claims**



1. Vehicle towing apparatus comprising a supporting frame adapted to be mounted on the rear and top of a motor vehicle, said frame including an upstanding support having a horizontal cross member and an upright boom-receiving slot which opens through said cross member, an elongated boom in registry with said slot and having a first end for selective attachment to a tractor, first means movably engaged with the cross member for supporting said boom for longitudinal movement for only a first portion of its length, said first means being disengaged from said cross member for a second portion of the length of said boom, said frame further including a retaining device spaced from said upstanding support which retains said boom for sliding and for swinging movement about a horizontal axis, and a boom-supporting element on said support which spans said slot and on which said boom may be carried, said boom being movable longitudinally for said first portion of its length until said first means disengages from said cross member whereby said second portion of said boom descends into said slot to rest on said boom-supporting element and to be confined against lateral movement by the sides of said slot, and a winch on said upstanding support beneath said boom and having a cable connectible to said boom intermediate its ends and adjacent said element.

4,316,618
NON-EXPOSED SKI BINDING

Eric A. Sampson, 520 S. Harrison La., Denver, Colo. 80209

Filed Feb. 19, 1980, Ser. No. 121,997
Int. Cl.³ A63C 9/08
U.S. Cl. 280—613 **18 Claims**

1. A binding for connecting a boot to a ski, said binding being operative to release said boot from said ski when the environmental forces on said ski from skiing exceed a predetermined amount, said binding comprising:

a plate releasably affixed under said boot, said plate comprising:

(a) a first sphere downwardly extending from said plate, said first sphere being oriented on the longitudinal axis of said plate and under the ball area of said boot, and

(b) a second sphere downwardly extending from said plate, said second sphere being oriented on said plate longitudinal axis and under the tibial axis of said boot,

a first movable and arcuate tract mounted in a first recess formed in the upper surface of said ski, said first tract being capable of releasably engaging said first sphere, said first tract being further curved in an arc toward said second sphere,

a second movable and arcuate tract mounted in a second formed recess in the upper surface of said ski, said second tract being capable of releasably engaging said second sphere, said second tract being further curved in an arc toward said first sphere, said first and second tracts being identical and symmetrical to each other and each comprising:

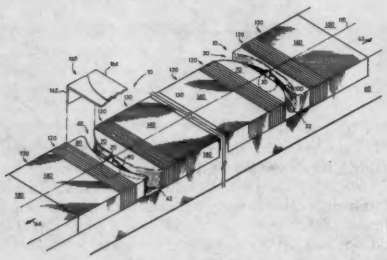
(a) a concave tract member,

(b) a centering groove formed on the concave surface of said concave member, said concave centering groove having a partial spherical cavity in the center of the aforesaid groove,

(c) means connected to said concave member and to said ski for biasing said concave member,

(d) a convex tract member,

(e) a centering groove formed on the convex surface of said convex member, said convex centering groove



having a partial spherical cavity in the center of the aforesaid groove,

(f) means connected to said convex member and to said ski for biasing said convex member toward said concave member, said concave member being spaced from said convex member to form said arcuate tract, said concave and convex centering grooves being capable of engaging said sphere and maintaining it aligned with the longitudinal axis of said ski in said partial spherical cavities under environmental forces less than said predetermined release force, said sphere being capable of traveling in said tract a predetermined distance in said concave and convex grooves when said environmental forces are less than said predetermined release force but greater than a predetermined travel force, said concave and convex centering grooves being capable of immediately returning said sphere to said longitudinal axis of said ski upon removal of said traveling forces, said concave and convex members being capable of releasing said sphere from said tract and in any direction above said ski when said environmental forces exceed said predetermined release force by moving against said concave and convex biasing means.

4,316,619

PASSIVE SEATBELT SYSTEM

Ichiro Suzuki, Nagoya; Masanao Motonami, and Hisashi Ogawa, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 28, 1980, Ser. No. 154,121

Claims priority, application Japan, Jun. 14, 1979, 54-81255[U]

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—804 **13 Claims**

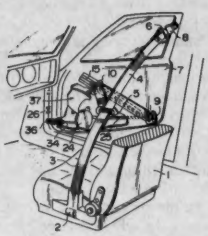
1. A passive seatbelt system for automatically moving a seatbelt webbing to approach or recede from an occupant, comprising:

a guide rail extending along a vehicle body;

a webbing guide received in and movable along said guide rail;

a thick wall tape extending along said guide rail and engaged with said webbing guide;

a driving means for driving said thick wall tape to cause said webbing guide to move along said guide rail due to movement of said thick wall tape; and



a tape casing adjacent to said driving means, said tape casing receiving a tail end portion of said thick wall tape, so that when maximum length of said tape is received within said tape casing, the tail end portion of said thick wall tape is substantially U-shaped along an inner surface of said tape casing, a tail end of said thick wall tape being fixed on the inner surface of said tape casing.

4,316,620

DEVICES ADAPTED FOR USE ON SKI POLES

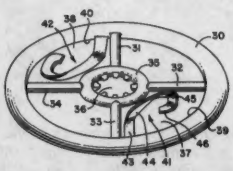
Arve Wien, Fabrikkveien 5, NO-2380 Brumunddal, Norway

Filed Apr. 16, 1979, Ser. No. 30,707

Claims priority, application Norway, Apr. 13, 1978, 781292

Int. Cl.³ A63C *11/24*

U.S. Cl. 280—824 **1 Claim**



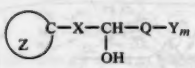
1. A device adapted for use on ski poles having a permanent ski ring to provide an auxiliary support for said ring and which comprises annular plate means for forming a support surface of substantially larger dimension in the radial plane of the ski pole than said ski ring and capable of being arranged on said ring to increase its supporting ability in loose snow, said annular plate means surrounding at its inner side a circular space and comprising a central hub, four radial spokes joining said inner side to said hub and defining therebetween four similar space quadrants, said hub being formed with an opening for receiving said ski pole defined by symmetrically spaced teeth extending radially inwards from the inner circular surface thereof, and a pair of catch claws occupying opposite space quadrants and adapted for ready manual attachment to and release from said ski ring.

4,316,621
PRESSURE-SENSITIVE OR HEAT-SENSITIVE RECORDING MATERIAL

Jean C. Petitpierre, Kaiseraugst, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 30, 1980, Ser. No. 192,382
Claims priority, application Switzerland, Oct. 26, 1979, 9629/79; Oct. 26, 1979, 9630/79
Int. Cl.³ B41M 5/18, 5/22
U.S. Cl. 282—27.5 19 Claims

1. A pressure-sensitive or heat-sensitive recording material which comprises in its colour reactant system, as developer for the colour former, at least one compound of the formula



(1)

wherein the ring Z is a heterocyclic radical which does not contain a keto group adjacent to the linking carbon atom,

X is the direct bond, —O—, —CHR—, —NR—, —CONR—, —SO_2NR—, —NR_1—CO—NR_2—, —RN_1—CS—NR_2— or —NR_1—SO_2—NR_2—, wherein each of

R, R_1 and R_2 independently is hydrogen, alkyl of at most 12 carbon atoms which is unsubstituted or substituted by halogen, cyano or lower alkoxy, or is benzyl, phenyl, or benzyl or phenyl each of which is substituted by halogen, methyl or methoxy,

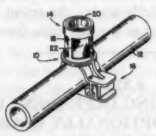
Q is carbon or an unsubstituted or substituted hydrocarbon radical,

Y is halogen and m is 1 to 3.

4,316,622
ACCUMULATOR FILTER AND CONDUIT CLAMP ASSEMBLY

John F. Nelson, New Lenox, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Aug. 26, 1980, Ser. No. 181,499
Int. Cl.³ F16L 41/00
U.S. Cl. 285—119 11 Claims

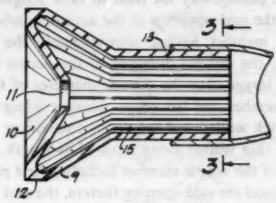


1. A one piece plastic clamp for establishing a secure connection to a conduit or the like comprising a pair or relatively rigid arms having generally concave inner surfaces contoured to be substantially complimentary to the outer transverse dimension of the conduit, said arms having inner ends and outer free ends; a relatively thin resilient hinge means joining the inner ends of said arms, said hinge means being initially generally arcuate in formation between said inner ends of said arms and projecting inwardly to present a deformable generally convex surface for engaging the outer surface of the conduit during the establishment of the secure connection between the clamp and the conduit; and integral means for locking the free ends of said arms together, said hinge means being arranged to exert a controlled continuous compressive force against the outer surface of the conduit for maintaining said secure connection between said clamp and the conduit.

4,316,623
SELF-PRESSURIZABLE PORTABLE VESSEL WITH FAUCET CONNECTOR

Quentin T. Kelly, R.D. #1, Box #4, Hopewell, N.J. 08525

Filed Nov. 19, 1979, Ser. No. 95,594
Int. Cl.³ B65D 37/00
U.S. Cl. 285—8 2 Claims

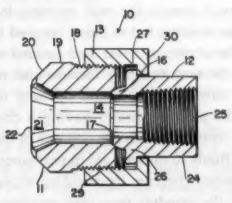


1. A hose faucet-connector comprising in combination: an integrally molded unit having an outer housing of wall structure forming a tubular through-space extending from a first open end to a second open end, being substantially wider in outside diameter at said first open end as compared to outside diameter at said second open end and having substantially uniform thickness of the wall structure throughout a length of said outer housing between said first open end and said second open end, and said molded unit having further a concavely shaped inner housing with at-least a faucet-mounting aperture with said inner housing extending across said first end and sealably fused therewith at outer peripheries of said inner housing, the improvement comprising spaced-apart ribs extending, independent of other support, along an inner surface of said outerhousing integral with solely said wall structure, with the ribs extending substantially in an axial direction relative to said tubular through-space ranging up to said outer peripheries of said inner housing, said outer housing and tubular space thereof at said first open end being substantially flared outwardly in shape and said concavely shaped inner housing being inwardly free of support by said spaced-apart ribs, free-space of the tubular space existing between the concavely shaped inner housing and said spaced-apart ribs, and said wall structure at locations between said spaced-apart ribs being sufficiently thin as to be flexible in nature, whereby said spaced-apart ribs render a sturdy structure axially of said tubular through-space when mounting the unit on a faucet and firm against tendencies to baloon or pop-off when elevated water pressure exists during water-flow from a faucet on which the unit is mounted through said faucet-mounting aperture.

4,316,624
ACCESS UNION

Irwin H. Davlin, 714 S. Court St., Opelousas, La. 70570

Filed Nov. 1, 1979, Ser. No. 90,461
Int. Cl.³ F16L 13/02, 19/00, 41/00
U.S. Cl. 285—158 27 Claims



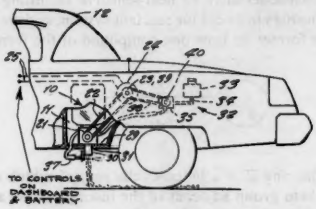
1. An access union comprising a weldable short axially extending access member having inner and outer termini, the access member having a non-internally threaded axially extending opening extending between the said outer terminus

thereof and the said inner terminus thereof to thereby provide a passageway for fluid to flow longitudinally therethrough, a short axially extending conduit receiving member having inner and outer termini, the conduit receiving member having an axially extending opening extending between the said inner terminus thereof and the said outer terminus thereof to thereby provide a passageway for fluid to flow longitudinally therethrough, the said openings in the access member and conduit receiving member having approximately the same internal diameters, the outside diameter of the access member being generally larger than the outside diameter of the conduit receiving member and the access member being relatively uniformly thick walled and the conduit receiving member being relatively thin walled along most of its length, the said inner terminus of the access member including first pressure sealing means around the said opening therein, the said inner terminus of the conduit receiving member including second pressure sealing means around the said opening therein, the said first and second pressure sealing means cooperating to form a fluid tight seal therebetween with the opening in the conduit receiving member being in communication with the opening in the access member when force is applied to the access member and conduit receiving member longitudinally in directions toward their respective inner termini, detachable means carried by the access member and the conduit receiving member for releasably applying force thereto longitudinally in directions toward their respective inner termini, the said detachable force applying means being adapted to be mounted in an effective force applying relationship on the relatively large outside diameter outer surface of the access member and the relatively small outside diameter outer surface of the conduit receiving member, the said first and second pressure sealing means being urged into a fluid tight sealing relationship and the opening in the conduit receiving member being in communication with the opening in the access member when the said detachable force applying means is carried by the access member and the conduit receiving member and the said force is applied thereto, the said first and second pressure sealing means being rendered ineffective to form a fluid tight seal therebetween and the opening in the conduit receiving member being out of assured communication with the opening in the access member when the said detachable force applying means is no longer carried by the access member and the conduit receiving member and the said force is no longer applied thereto, the access member including means adjacent the outer terminus thereof for adapting it to be permanently installed by welding around an opening in the wall of a container for fluids with the said opening in the access member being in communication with the interior of the said container for fluids to thereby provide access thereto, the said adapting means on the access member including an annular welding bevel around the said opening in the outer terminus thereof, the welding bevel being tapered toward the outer terminus of the access member and inward toward the outer terminus of the said opening therein and terminating adjacent the outer terminus of the said opening therein, the outer terminus of the access member having a configuration which substantially conforms with the contour of the said wall of the container for fluids to thereby aid in permanently installing the access member thereon by welding along the said welding bevel, and the conduit receiving member including means adjacent the outer terminus thereof for attaching a conduit for fluid thereto whereby the interior of the said conduit is in communication successively with the said opening in the conduit receiving member and the said opening in the access member.

4,316,625
VEHICULAR SALT DISPENSER

Harry Goon, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Feb. 1, 1980, Ser. No. 117,660
Int. Cl.³ B61C *15/10*; B05B *7/24*
U.S. Cl. 291—1 **1 Claim**



1. A traction increasing vehicular salt dispenser, comprising in combination, a salt dispensing unit for each rear wheel; a drive unit for said dispensing units; each said dispensing unit comprising a container containing said salt; said container being mounted in front of the rear wheel; a hopper with a first outlet mounted under said container and a rotatable dispensing regulator mounted under said first outlet of said hopper; said drive unit includes an electric motor controlled from a dashboard of a vehicle; a shaft connecting the dispensing regulators; a first pulley affixed on said shaft, an endless belt secured around said first pulley and around a second pulley, wherein said second pulley is affixed to a motor shaft of the electric motor; said regulator, which opens and closes said first outlet, including means for receiving salt from said first outlet and dispensing it at regular intervals towards a second outlet; wherein said regulator is a wheel and said means is a recess at its periphery which aligns at regular intervals with said first outlet; a hollow base enclosing said regulator and including said second outlet which is mounted downstream of the first outlet; a spout being connected to said second outlet; a water container; a water pump connected to the water container to pump water to both the dispensers; said pump being driven by an endless belt secured around a third pulley connected to the motor shaft and a fourth pulley mounted on the pump; and a spray nozzle mounted below and secured to the spout so that water is sprayed horizontally under the spout toward the rear wheels to moisten the salt as the salt falls from the spout.

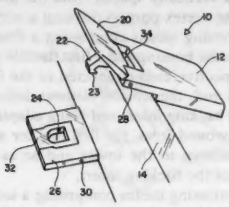
4,316,626
FLUSH HASP HAVING DEPENDENT LATCHING PORTION, AND OPTIONALLY USABLE WITH PADLOCK

Charles F. Kafka, Bradenton, and Robert S. Kafka, Maitland, both of Fla., assignors to Meacham Marine Products, Inc., Sarasota, Fla.

Filed Sep. 14, 1979, Ser. No. 75,654
Int. Cl.³ E05C *19/08*
U.S. Cl. 292—285 **6 Claims**

1. A hasp having a base portion, and a portion movable toward and away from engagement with said base portion, said base portion having an aperture therein, and said movable portion having a dependent member adapted on occasion to enter said aperture, said dependent member having latching means adapted to be moved between a position in which engagement and disengagement of said portions is readily permitted, and a motion-inhibiting position, and locking means for preventing on occasion, said latching means from being moved away from the motion-inhibiting position, said locking means taking the form of a closed loop hingedly mounted on said base

portion, said closed loop, when moved out of a recessed position on said base portion and into an upstanding position, being



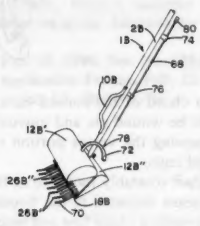
able to be inserted through a slot in said movable portion, and thereafter adapted to receive the shackle member of a padlock.

4,316,627

IMPLEMENT FOR COLLECTING PET MANURE

Joseph Solypa, 11771 Oldfield Ave., Richmond, British Columbia, Canada V6X 1M3

Filed Jul. 15, 1980, Ser. No. 169,149
Int. Cl.³ A01K *29/00*
U.S. Cl. 294—1 BA **4 Claims**



1. An implement for collecting pet manure and similar refuse comprising:

an elongate handle with a bottom end;

a scoop mounted at the bottom end of the handle and having a bottom edge;

a cover;

means for moving the cover to cover the scoop; and

a plurality of adjacent, generally parallel members extending forwardly from the bottom edge of the scoop, the members being wire-like, permitting the members to be inserted under the manure and then lift the manure when the handle is raised, the parallel members being in two sets, the members of the two sets alternating with each other, the members of a first said set extending outwardly beyond the members of a second said set.

4,316,628

SUCTION PADS FOR SUPPORTING LOADS

Rodney C. Farmer; Hugh A. Goldsmith, both of Bristol, and Michael J. Proudlove, Congleton, all of England, assignors to Nuclear Power Company Limited, London, England

Filed Jul. 21, 1980, Ser. No. 170,629
Claims priority, application United Kingdom, Jul. 25, 1979, 25984/79
Int. Cl.³ B66C *1/02*
U.S. Cl. 294—64 R **6 Claims**

1. A suction pad for supporting a load in a selectively slidable state from a supporting surface, comprising:

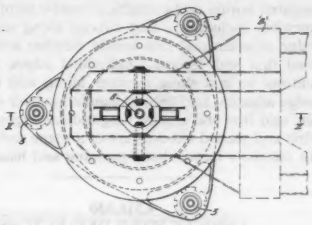
a disc (**1**);

an annular deformable face seal (**2**) spaced from said disc for sealingly engaging a surface;

an extensible ring (**11**) between said disc and said face seal permitting the disc and seal to be moved towards and away from each other and defining an evacuable void (V) when the face seal engages a surface;

suction means (**6**) energisable to evacuate said void; and

fluid thrust means (**3**) on said disc for contacting said surface and selectively independently energisable to exert an



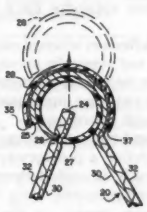
upward thrust on said disc and effect escape of fluid between the thrust means and the surface; the arrangement being such that with the suction means energised and the thrust means not energised the pad clings with high lateral adhesion to said surface, and with the suction means still energised and the thrust means also energised the pad clings to said surface with low lateral adhesion.

4,316,629

HANDLED TOTE APPARATUS

Glenn C. Jacoby, 6426 N. 23rd Pl., Scottsdale, Ariz. 85253

Filed Sep. 19, 1977, Ser. No. 834,172
Int. Cl.³ B66C *1/12*
U.S. Cl. 294—152 **2 Claims**



1. A handled tote apparatus for storing, lifting and carrying selected items comprising:

an elongated flexible sheet element having first and second spaced apart longitudinal edges and first and second lateral edges and doubled to bring said first lateral edge toward said second lateral edge for maintaining selected items therebetween;

a first substantially rigid and non-deformable elongate cylindrical handle member having an external diameter of a given dimension secured to said sheet member and extending along said first lateral edge; and

a second substantially rigid elongate handle member semicylindrical along its entire length, secured to said sheet member and extending along said second lateral edge, said second handle member including a longitudinal opening having an arcuate width smaller than half its circumference, and smaller than the external diameter of said first cylindrical handle member, said second handle member forming a socket for receiving said first handle member, said second handle member being resiliently yieldable for receiving said first cylindrical handle member through said longitudinal opening in longitudinal juxtaposition with the inner surface of said second handle member so said second handle member overlies and resiliently grips

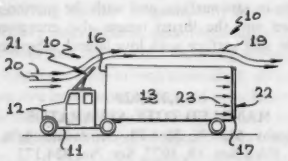
said first handle member along its entire length forming a common handle structure, said first cylindrical handle member including a longitudinal slit adapted to receive the said first lateral edge of said sheet member, said sheet member further including means attached thereto and sized larger than said longitudinal slit in said first handle member to retain said lateral edge of said sheet member secured within said cylindrical handle member, said sheet member including a first cut-out along said first lateral edge adjacent said first handle member and intermediate said first and second longitudinal edges, and a second cut-out in said sheet member along said second lateral edge adjacent said second handle member and intermediate said first and second longitudinal edges, wherein said first and second cut-outs are of a shape and size sufficient to receive a human hand grasping said handle members.

4,316,630

VEHICLE WIND DEFLECTORS

Jack L. Evans, 110 Devenshire Cir., Rough & Ready, Calif. 95945

Filed May 27, 1980, Ser. No. 153,032
Int. Cl.³ B62D *37/02*
U.S. Cl. 296—1 S **6 Claims**



1. Wind deflector apparatus for a vehicle comprising the combination of:

a pair of wind deflectors wherein each deflector is of arcuate cross section and vertically arranged with respect to said vehicle so as to be in spaced apart relationship on opposite sides of the vehicle rear immediately adjacent the juncture of the sides with the rear;

a plurality of stand-offs securing each deflector to said vehicle so as to define a passageway between the opposing surfaces of each of said deflectors and the associated vehicle side and rear; and

air spreader means carried on the vehicle rear having an entrance for receiving oncoming ram air and for discharging said ram air immediately adjacent the vehicle rear so as to destroy the creation of vacuum when the vehicle is moving forwardly;

said spreader means includes elongated tubes arranged in sets across the rear of the vehicle for conducting air to specific locations;

each of said tubes includes an entrance and an exit wherein said entrance is immediately adjacent said wind deflector and said exit exhausts substantially at the mid-section at the rear of said vehicle.

4,316,631

BACKREST

Wolfgang Lenz; Johann Albenberger, and Karl Knell, all of Steyr, Austria, assignors to Steyr-Daimler-Puch Aktiengesellschaft, Vienna, Austria

Filed Dec. 6, 1979, Ser. No. 100,726
Claims priority, application Austria, Jan. 24, 1979, 490/79
Int. Cl.³ A47C *7/46*
U.S. Cl. 297—284 **13 Claims**

1. A backrest comprising

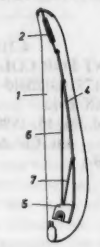
(a) a backrest frame,

(b) a housing fixedly mounted on the frame,

(c) a curved backing insert held in the backrest frame and adjustable to conform to the spine of a person leaning against the backrest, the insert comprising an elastic bow having a lower end fixedly supported in the housing, a second end vertically spaced from the lower end and an intermediate vertex portion defining a vertex,

(d) a first stressing means comprising a first reel rotatably mounted in the housing and a first flexible tension element having respective ends connected to the first reel and to the second end, the tension element defining a chord of the curved backing insert and being adapted to be wound on, and unwound from, the first reel for moving the second end relative to the lower end so as to change the curvature of the backing insert,

(e) a second stressing means comprising a second reel rotatably mounted in the housing and a second flexible tension element having respective ends connected to the second reel and to the vertex portion, the second tension element



defining a chord of the curved backing insert and being adapted to be wound on, and unwound from, the second reel for moving the vertex portion relative to the lower and second ends,

(f) a drive shaft rotatably mounted in the housing,

(g) clutch means mounted in the housing and operable for selective coupling of the first and second reels to the drive shaft,

(h) first retaining means adapted to cooperate releasably with the first reel to hold the first stressing means in an adjusted position, and

(i) second retaining means adapted to cooperate releasably with the second reel to hold the second stressing means in an adjusted position, the adjusted positions of the first and second stressing means maintaining the curved backing insert conformed to the spine of the person leaning thereagainst.

4,316,632

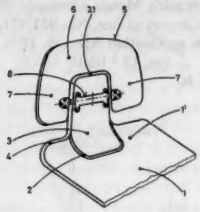
ERGONOMIC CHAIR

Egon Bräuning, Weil am Rhein, Fed. Rep. of Germany, assignor to Protoned BV, Amsterdam, Netherlands

Filed Aug. 22, 1979, Ser. No. 68,850
Claims priority, application Switzerland, Sep. 8, 1978, 9433/78
Int. Cl.³ A47C *7/40*
U.S. Cl. 297—291 **2 Claims**

1. An ergonomic chair with a seat and a back rest stably connected to the seat, the upper end of the back rest engaging in a recess of a shoulder pad which is open at the bottom and shaped like an inverted "U", the shoulder pad being pivotally hinged to the back rest in the region of its upper portion by a base plate secured to the upper end of the back rest and having support pins of non-circular cross-section protruding laterally from both sides of the back rest, into corresponding recesses in opposite sides of the shoulder pad, and including sleeves of elastic material surrounding the support pins in said recesses,

and cover plates attached to the shoulder pad with means for pressing said sleeves into the recesses, whereby rotation of the



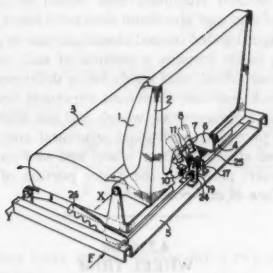
sleeves in the recesses is prevented and pivotal movement of the shoulder pad is elastically resisted by the sleeves.

4,316,633

CONVERTIBLE AUTOMOBILE SEAT STRUCTURE PROVIDED WITH A SAFETY BELT HOOKING DEVICE

Moïse Zaccariotto, Paris, France, assignor to Automobiles Peugeot and Societe Anonyme Automobiles Citroen, both of Paris, France

Filed Feb. 15, 1980, Ser. No. 121,884
Claims priority, application France, Feb. 22, 1979, 79 04525
Int. Cl.³ B60N *1/02*
U.S. Cl. 297—331 **5 Claims**



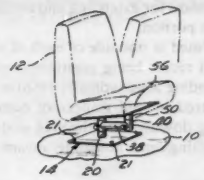
1. A convertible automobile vehicle seat structure in combination with a vehicle having a floor, the seat structure comprising a seat mounted in the vicinity of the front part of the seat to pivot about a transverse axis between a swung-down position for use of the seat and a swung-up withdrawn position, a hooking device for the attachment of a safety belt and connected to the seat to swing with the seat between said two positions of the seat, and connecting means for anchoring the hooking device directly to the floor of the vehicle when the seat is in said swung-down position whereby any tensile force exerted on the seat belt and hook device in said swung-down position of the seat is taken directly by the floor, said connecting means comprising a latch carried by the hooking device, a keeper pivotally mounted relative to the floor, a release spring biasing the keeper, the keeper being cooperative with the latch to be driven by the latch to a position of engagement with the latch under the effect of a substantially vertical load applied on the seat in opposition to the action of the release spring as the seat approaches said swung-down position, a bolt cooperative with the keeper for locking the keeper in its engaged position with the latch, and manual means for disengaging the bolt.

4,316,634

SEAT MOUNTING APPARATUS

Layton S. Roesler, 3515 Mound St., Ventura, Calif. 93003

Filed Oct. 29, 1979, Ser. No. 89,565
Int. Cl.³ A47C *1/02*
U.S. Cl. 297—349 **7 Claims**



1. A seat mounting apparatus comprising:

a base adapted to be secured to a supportive surface, said base having an upright post mounted thereon, said upright post defining a first axis;

a first end of an elongated member being pivotally connected by first pivot means to said upright post, a second end of said elongated member being pivotally connected by second pivot means to a downwardly extending post, said downwardly extending post defining a second pivot axis, said second pivot axis being spaced from said first pivot axis;

an attaching plate secured to said downwardly extending post, whereby a seat is to be mounted on said attaching plate thereby permitting the seat to swivel about said second pivot axis; and

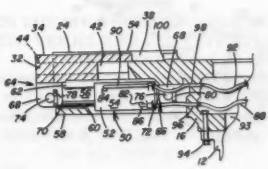
said first pivot axis being located perpendicular to said base, said second pivot axis being parallel to said first pivot axis, the plane of said attaching plate being inclined with respect to said second pivot axis.

4,316,635

EXTENSIBLE AND RETRACIABLE ROTOR ARM CUTTING ASSEMBLY

Maurice K. LeBegue, Argillite, Ky., and Earl C. Michael, Hoyleton, Ill., assignors to National Mine Service Company, Pittsburgh, Pa.

Filed May 27, 1980, Ser. No. 153,099
Int. Cl.³ E21C *27/24*; E21B *10/62*
U.S. Cl. 299—80 **8 Claims**



1. A rotor arm cutting assembly comprising,

a rotor having a hub portion with an axis of rotation and a plurality of cutter arm members extending radially outwardly from said hub portion,

said cutter arm members each having a fixed length and adapted to dislodge solid material along the entire length of said respective cutter arm member about said axis of rotation,

a cutter arm extension portion positioned for longitudinal movement on each of said cutter arm members to extend and retract the effective cutting length of each cutter arm member,

each of said cutter arm members having a longitudinally

extending slot for telescopically receiving said cutter arm extension portion,

complimentary guide means associated with each cutter arm member and said cutter arm extension portion for maintaining longitudinal movement of said cutter arm extension portion in said slot of each cutter arm member,

actuating means for extending and retracting said cutter arm extension portion,

a recess formed in one side of each of said cutter arm members, said recess being positioned oppositely of said slot and extending longitudinally relative to said slot,

means secured to said respective cutter arm member and extending downwardly through said slot into said recess for mounting said actuating means to said cutter arm member,

said actuating means being connected to said mounting means to support said actuating means within said recess and oppositely of said slot,

an opening extending through said cutter arm member and communicating with said recess to permit access to said actuating means within said cutter arm member, and

said actuating means being secured to and extending between said cutter arm extension portion and said respective cutter arm member so that upon operation of said actuating means said cutter arm extension portion is movable longitudinally in said slot to both extend and retract said cutter arm extension portion relative to said cutter arm member.

4,316,636

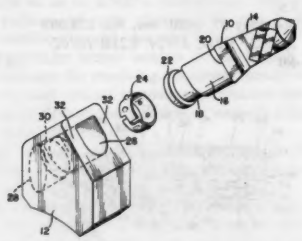
EXCAVATION AND ROAD MAINTENANCE BITS AND BLOCKS

Jack A. Taylor, Ligonier; Wayne H. Beach, Roaring Spring, and Raymond C. Weyant, Jr., New Paris, all of Pa., assignors to Kennametal Inc., Latrobe, Pa.

Continuation of Ser. No. 8,435, Feb. 1, 1979, abandoned. This application Sep. 8, 1980, Ser. No. 185,272

Int. Cl.³ E21C *35/18*

U.S. Cl. 299—92 **11 Claims**



2. A road planing tool which comprises: a forward working portion, a shank portion and attachment means for holding said tool in a mounting block, said forward working portion being flat, bar-like, and having laterally extending shoulders, a rearwardly facing abutment shoulder formed at the juncture of said shank portion and said working portion, said shank portion having a cross section which is rotationally nonsymmetric about a longitudinal axis containing its geometric center and which is in and of itself sufficient to assure that said tool will be held nonrotatably and with a unique orientation when placed in a block having a similarly shaped and sized bore, a flanged portion rearwardly of said shank and resilient clip means around said bit forwardly of said flanged portion for engaging the bore of the block and holding the bit in the block.

4,316,637

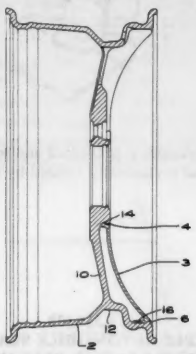
MULTI-STYLED ALUMINUM WHEEL

J. Louis Reynolds, and Paul R. O'Brien, both of Richmond, Va., assignors to Reynolds Metals Company, Richmond, Va.

Continuation-in-part of Ser. No. 931,171, Aug. 4, 1978, abandoned. This application Nov. 15, 1979, Ser. No. 94,738

Int. Cl.³ B60B *13/00*

U.S. Cl. 301—37 R **9 Claims**



1. A composite automotive wheel upon which an inflatable tire may be mounted, comprising a metal worked aluminum base wheel and a cast aluminum structural insert, said metal worked aluminum base wheel comprising a rim having a wheel well and a hub positioned adjacent said wheel well, said cast aluminum structural insert being permanently locked within said metal worked aluminum base wheel to prohibit axial movement of said cast aluminum structural insert by means of a pair of flanges located on said cast aluminum structural insert and locking beads forming a portion of said metal worked aluminum base wheel, said beads being deformed about said flanges to lock said cast aluminum structural insert into said metal worked aluminum base wheel, said cast aluminum structural insert providing additional structural strength to said metal worked aluminum base wheel and said cast aluminum structural insert providing the major portion of the outside decorative face of composite wheel.

4,316,638

WHEEL TRIM

Edward G. Spisak, 35700 Oakwood La., Westland, Mich. 48185

Filed Jul. 21, 1980, Ser. No. 170,580

Int. Cl.³ B60B *7/00*

U.S. Cl. 301—37 P **10 Claims**

1. A wheel trim assembly for detachable connection to a vehicle wheel having an outer face with a plurality of uni-

formly spaced wheel securing fasteners located on a circle concentric with said wheel, said wheel trim comprising: a cup-shaped ornamental trim member adapted to be supported axially of said vehicle wheel, a plurality of mounting stations formed in uniformly spaced relationship within said trim member, each of said stations forming a pair of openings, a first opening of each pair extending in a radial direction through a wall of said cup-shaped trim member and a second opening of each pair extending in an axial direction within said cup-shaped trim member, a plurality of retaining members, each of said retaining members having a radially extending portion slidably disposed in said first opening to project to the exterior of said trim member to limit axial movement of said retaining member and an axially extending portion disposed in said second opening to limit radial movement of said retaining member, and a blade portion formed at the end of each of said radially extending portions of said retaining members to bitingly engage said wheel fasteners for securing said wheel trim.

4,316,639
BRAKING FORCE CONTROL DEVICE

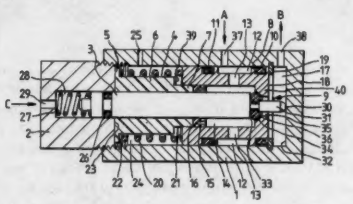
Ernst D. Schäfer, Bad Nauheim, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Apr. 21, 1980, Ser. No. 141,828

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1979, 2927929

Int. Cl.³ B60T *8/02*

U.S. Cl. 303—6 C **16 Claims**



1. A braking force control device for a two-circuit brake system comprising:

a housing having a longitudinal axis and a constant diameter internal chamber coaxial of said axis;

a controlling piston disposed in said internal chamber coaxial of said axis;

a locking piston disposed in said internal chamber coaxial of said axis and surrounded by said controlling piston;

a third piston disposed in said internal chamber coaxial of said axis and between the inner surface of said controlling piston and the other surface of said locking piston, said locking piston being axially slidable in said third piston on an inner surface thereof and said controlling piston being axially slidable on at least a portion of the outer surface of said third piston; and

a prestressed control spring acting on said controlling piston to determine together with surfaces of said controlling piston subjected to braking pressure in one circuit of said brake system a switching pressure which when exceeded will cause said braking pressure in said one circuit of said brake system to be controlled;

said locking piston being subjected to braking pressure in the other circuit of said brake system to cancel the control of said braking pressure in said one circuit of said brake system when said other circuit of said brake system fails.

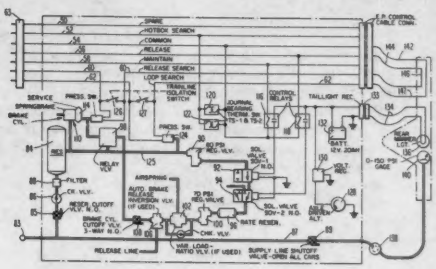
4,316,640
ELECTRO PNEUMATIC BRAKE SYSTEM FOR RAILWAY CAR

Christopher A. Cripe, Richmond, Va., assignor to Bi-Modal Corporation, Greenwich, Conn.

Filed Jun. 13, 1980, Ser. No. 159,045

Int. Cl.³ B60T *13/68*

U.S. Cl. 303—20 **33 Claims**



1. In combination with a railway car having air cylinder operated brakes to retard the movement of the car,

a. a source of air pressure;

b. regulator means connected to said source of air pressure to produce a regulated constant output air pressure therefrom;

c. a reservoir for receiving air pressure from said regulator means;

d. electrical means connected between said regulator means and said reservoir for selectively controlling the time durations that air pressure is applied from said regulator means to said air reservoir to thereby control the amount of air pressure in said reservoir;

e. pressure responsive valve means connected between said source of air pressure and said brake cylinder to supply a variable pressure to said brake cylinder in accordance with the amount of air pressure applied to said valve means; and

f. means for connecting the air pressure from said reservoir to said pressure responsive valve means to thereby control the air pressure from said source to said brake cylinder in accordance with the amount of air pressure in said reservoir.

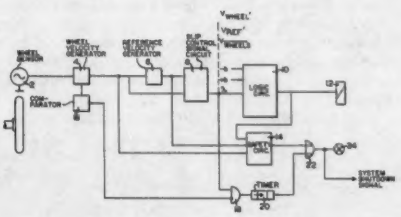
4,316,641
CIRCUIT FOR THE SHUTDOWN OF AN ANTI-LOCKUP PROTECTED VEHICLE BRAKE UNIT IN CASE OF DISTURBANCE

Lutz Weise, Mainz, and Johann Rothen, Nordstemmen, both of Fed. Rep. of Germany, assignors to WABCO Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Feb. 9, 1979, Ser. No. 10,653

Int. Cl.³ B60T *8/10*

U.S. Cl. 303—92 **4 Claims**



1. A circuit for detecting a malfunction in a wheel anti-

lockup protected vehicle brake system so as to effect a shutdown of said system including:

(a) at least one rotation sensor device to monitor the rotational behavior of at least one said wheel of said vehicle;

(b) wheel velocity generator means to which said sensor device is connected for providing a wheel speed signal corresponding to the rotational velocity of said wheel;

(c) reference velocity generator means to which said wheel speed signal is connected for providing a reference speed signal representative of the speed of said vehicle;

(d) means subject to said wheel speed signal and said vehicle velocity signal for providing a wheel slip signal when the wheel rotational speed is less than the vehicle speed;

(e) a logic circuit to which said wheel slip signal is connected in conjunction with a wheel deceleration signal and a wheel acceleration signal for evaluation in terms of determining the condition of rotation of said wheel; wherein the improvement comprises:

(f) means for comparing said wheel speed signal with a predetermined threshold value; and

(g) means for providing a shutdown signal to terminate operation of said wheel anti-lockup brake system in the event of a malfunction thereof, as indicated by said wheel speed signal being less than said threshold value concurrently with the presence of said wheel slip signal for a predetermined period of time.

4,316,642

CONTROL DEVICE FOR HYDRAULIC BRAKE SYSTEMS INCORPORATING ANTISKID CONTROL APPARATUS

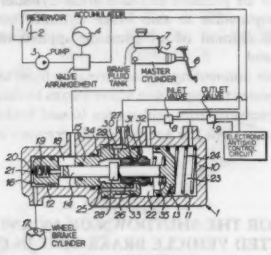
Juan Belart, Walldorf, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Feb. 19, 1980, Ser. No. 122,094

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1979, 2908482

Int. Cl.³ B60T *8/04*

U.S. Cl. 303—116 **4 Claims**



1. A control device for hydraulic brake systems having wheel locking regulation apparatus comprising:

an outlet piston slidably sealed in a housing bore, one end of said outlet piston defining one boundary of an inlet chamber connected to a master cylinder and the other end of said outlet piston defining one boundary of an outlet chamber connected to at least one wheel brake cylinder;

a passage disposed coaxially in said outlet piston closable by a valve member held open by means extending from one closed end of said bore defining the other boundary of said outlet chamber when said outlet chamber has its smallest volume, said passage being connected between said inlet chamber and said outlet chamber;

a control piston disposed in said bore spaced from said one end of said outlet piston, one end of said control piston spaced from said one end of said outlet piston defining in cooperation with the other closed end of said bore a control chamber selectively coupled to one of a pressure accumulator and a reservoir and the other end of said control piston adjacent said one end of said outlet piston defining one boundary of a reaction chamber connected directly to said accumulator;

a piston shaft connected between said one end of said outlet piston and said other end of said control piston to enable movement of said control piston to directly move said outlet piston;

a first spring disposed in said control chamber to prestress said control piston and said outlet piston in the direction of said outlet chamber; and

a reaction piston disposed in a slidably sealed relation on said piston shaft having a first actuating surface transverse of said bore defining the other boundary of said inlet chamber and a second actuating surface having an area different from the area of said first actuating surface transverse of said bore defining the other boundary of said reaction chamber.

4,316,643

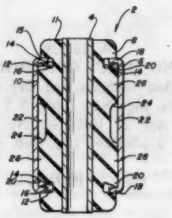
VEHICLE SUSPENSION BUSHING

Michael D. Burk, Logansport, Ind.; Gary L. Hipsher, Pompano Beach, Fla., and Gregory M. Nicoles, Logansport, Ind., assignors to The General Tire & Rubber Co., Akron, Ohio

Filed Mar. 25, 1980, Ser. No. 133,729

Int. Cl.³ F16C *27/06*

U.S. Cl. 308—26 **2 Claims**



1. A vehicle suspension bushing including a tubular rigid inner member, a tubular rigid outer member surrounding said tubular inner member, and an annular elastomeric member inserted between said inner and outer rigid members for absorbing loads created by relative movement between said inner and outer rigid members, said bushing characterized by:

(1) said elastomeric member having in its outer surface two axially spaced circumferentially extending slots;

(2) said outer rigid member having a radially inwardly extending flange on each end protruding into each of said slots and retaining the elastomeric material axially adjacent said slots to increase the resistance of said bushing to relative axial movement between said inner and outer rigid members, while offering a relatively low resistance to radial movement between said rigid members; and

(3) the axially inward lateral walls of said slots being canted so as to extend from the base surfaces of said slots axially toward the ends of the elastomeric member and make acute angles with the outer surface of the elastomeric member at the mouths of said slots.

4,316,644

MODULAR CONTAINER

Jerry L. Johnson, Potrero, Calif., assignor to Landes Manufacturing Company, Los Angeles, Calif.

Filed Oct. 22, 1979, Ser. No. 86,699

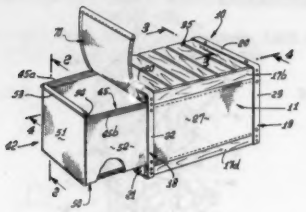
Int. Cl.³ A47B *87/00*

U.S. Cl. 312—108 **3 Claims**

1. A container comprising, in combination,

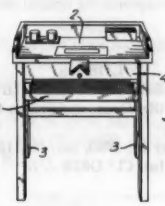
(a) a framework including two generally rectangular metallic looops and four elongated parallel members interconnecting said loops to define a cube-like module having multiple side areas, a top area and a bottom area, the loops having inner sides to which outer sides of said members are attached,

(b) means associated with the framework to cover certain of said areas,
(c) two of said elongated parallel members defining elongated support slides,
(d) a drawer having a generally rectangular movable frame defining parallel peripheral guide rails for cooperation with said support slides whereby the drawer may be advanced and retracted relative to said framework, and
(e) the drawer including a basket having flexible walls supported by and hanging from said movable frame, whereby



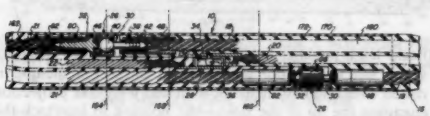
the basket may be collapsed upwardly toward a plane defined by the movable frame, said basket and said movable frame having a retracted position substantially entirely confined within an interior zone bounded by said framework defined multiple side areas, top area and bottom area,
(f) each of said members defining an elongated groove spaced from said slide and including relatively stiff cover means interfitting said grooves and confined by said members.

4,316,645
PILFER-PROOF PRECIOUS METAL FILINGS COLLECTION BOX
Richard M. Korwin, 404 E. 66th St., New York, N.Y. 10021
Filed May 22, 1980, Ser. No. 152,359
Int. Cl.³ A47B *88/00*
U.S. Cl. 312—212 **1 Claim**



1. A jeweler's bench pan slideable into a drawer space along drawer guides in a jeweler's work bench, said jeweler's bench pan comprising four sides connected together and a screen connected between all four sides, said screen being connected to said four sides to be recessed with respect to the top of said four sides, said screen comprising openings of a size to permit jewelry filings and droppings to pass through but prevent insertion through said screen of the jeweler's fingers and hands, slide means formed along opposite side edges of said jeweler's bench pan allowing said jeweler's bench pan to slide along said drawer guides in said jeweler's work bench, said jeweler's work bench further comprising guide means formed along opposite side edges along the bottom of said jeweler's bench pan, a collection drawer forming the bottom surface of said jeweler's bench pan slideable along said guide means of said jeweler's work bench catching the jewelry droppings and filings, said collection drawer comprising lock means to lock said collection drawer into said jeweler's work bench to prevent unauthorized access to said jewelry filings and droppings, said screen being of sufficient strength to support the tools of a jeweler placed thereon.

4,316,646
LATERALLY FLEXIBLE ELECTRICAL CONNECTOR ASSEMBLY
Larry N. Siebens, Great Meadows, N.J., assignor to Amerace Corporation, New York, N.Y.
Filed Feb. 4, 1980, Ser. No. 118,650
Int. Cl.³ H01R *35/00*
U.S. Cl. 339—7 **19 Claims**



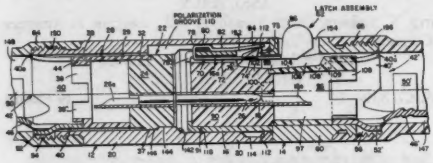
1. An electrical connector assembly for selectively connecting consecutive sections of a power cable to produce an assembled cable of a desired longitudinal length and enabling selective disconnection of the cable sections, the cable sections each having a plurality of conductors including at least one supply conductor and at least one ground conductor, said electrical connector assembly comprising:
a plurality of connector elements corresponding to the plurality of conductors, said connector elements being spaced longitudinally from one another, each of said connector elements having electrically connectable first and second components thereof, each one of said first and second components having a first end and a second end;
securing means at the first end of each first component for electrically connecting and mechanically securing each first component to a conductor of one of said cable sections, and further securing means at the first end of each second component for electrically connecting and mechanically securing each second component to a corresponding conductor of another of said cable sections; and
complementary means at the second end of each first component and at the second end of each second component for enabling selective mechanical and electrical connection and disconnection of the second ends to and from one another, said complementary means including relative motion means for enabling the first and second components to move relative to one another in response to lateral mechanical loads acting upon the connector element through the assembled cable when the first and second components are connected so as to enable lateral flexing of the assembled cable and the electrical connector assembly while maintaining the integrity of the electrical connection between said second ends and the integrity of the mechanical connection between connected consecutive cable sections.

4,316,647
MINIATURE AUDIO CONNECTOR
James R. Bailey, Chicago, and John R. Herron, Park Ridge, both of Ill., assignors to Switchcraft, Inc., Chicago, Ill.
Filed Nov. 30, 1979, Ser. No. 99,046
Int. Cl.³ H01R *13/629*
U.S. Cl. 339—91 R **6 Claims**

1. An electrical connector comprising:
(a) a first connector member comprising a sleeve-like housing having at least one electrical conductor, the housing having a lip and a polarization groove, the lip being disposed laterally adjacent the groove;
(b) a second connector member comprising a post-like housing having at least one electrical conductor and having a longi-

tudinal portion to interfit in coaxial alignment with the sleeve-like housing of said first connector member; and

(c) a mechanical latching system carried by said longitudinal portion of the post-like housing including a resilient latch member having a wing-like projection extending laterally outward from an edge portion of said latch member,



(d) said latch member being adapted to be slidably disposed within said polarization groove when said second member is mated with said first member, with said wing-like projection engaging the lip of the sleeve-like housing to interlock the first and second connector members.

4,316,648

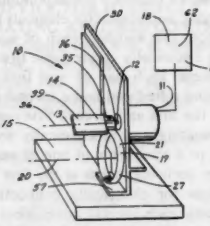
BY-DIRECTIONAL BRUSHLESS MOTOR SCANNER

Selwyn L. Lissack, 14505 Greenwood La., Tustin, Calif. 92680

Filed Jun. 27, 1980, Ser. No. 163,722

Int. Cl.³ G02B *27/17*

U.S. Cl. 350—6.6 **12 Claims**



1. A scanner, comprising:

a base;

a by-directional brushless electric motor coupled to the base;

a shaft having a rest position and a shaft axis wherein the shaft is coupled to the motor so that the shaft is rotatable about the shaft axis by the motor;

a reflecting surface coupled to the shaft so that the reflecting surface is rotatable; and

a spring having a surface shaped like part of a cylindrical surface and orientated with respect to the shaft so that the surface of the spring is substantially parallel to the shaft axis and the spring is coupled to the base at a first point on the surface of the spring and the spring is coupled to the shaft at a second point on the surface of the spring so that the spring will exert a force on the shaft towards the rest position when the shaft is rotated about the shaft axis from the rest position.

4,316,649

STABILIZED ZOOM BINOCULAR

Luis W. Alvarez, Berkeley, and Arnold J. Schwemin, Walnut Creek, both of Calif., assignors to Schwem Instruments, Pleasant Hill, Calif.

Filed Nov. 26, 1979, Ser. No. 97,114

Int. Cl.³ G02B *23/08*

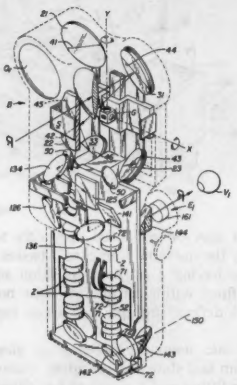
U.S. Cl. 350—16 **20 Claims**

8. In the combination of a stabilized optical train including a case for holding optical elements; at least one optical path for providing a view through said stabilized optical train; fixed optical elements in said optical path mounted to said case to undergo accidental angular motion with said case; and compensating optical elements in said optical path mounted to and movable with respect to said case to undergo at least, in part, stabilizing motion with respect to said case upon accidental angular motion being imparted to said case, said compensating optical elements providing image stabilization with respect to said case; and biasing means for biasing said compensating optical element to grossly move into alignment with said case, the improvement in said biasing means including:

a light source having a pulsed optical output generating a plurality of sequential signals;

a plurality of detectors for receiving said optical output;

means attached to said stabilizer element and forming a part of said light path between said light source and detector to vary



the amount of light received at each detector dependent upon the excursion of said compensating optical element with respect to said case;

comparator means for sequentially receiving and comparing a first sequential signal to a second sequential signal and emitting responsive to a difference in said signal a comparison signal; and,

biasing means responsive to said comparison signal for changing bias on said compensating element dependent upon light incident upon said detectors to provide a variable bias upon excursion of said compensating optical element with respect to said case.

4,316,650

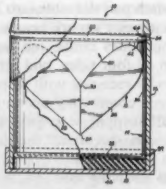
SEALED PRISM ASSEMBLY

Jim Buckley, Wilsonville, Oreg., assignor to McHenry Systems, Inc., Donald, Oreg.

Filed May 27, 1980, Ser. No. 153,044

Int. Cl.³ G02B *7/18*

U.S. Cl. 350—67 **3 Claims**



1. Apparatus for sealing the rear side of a prism, where the same includes a cylindrical body region which terminates at one of its ends with an annular outwardly projecting flange, said apparatus in operative condition comprising

a cup which encases such body region, said cup having a wall portion which fits closely and circumferentially about such region, terminating with a circular end which contacts such flange,

elastomeric sealing means disposed between said cup wall portion and such body region forming an expandable-contractable air-tight annular seal therebetween,

an elongate canister in which the prism and cup are slidably received,

means located adjacent one end of said canister defining a shoulder for engaging the prism, and

means biasing said end against such flange.

4,316,651

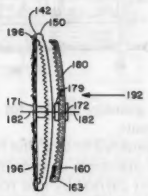
REFLECTOR ASSEMBLY WITH ENHANCED VISIBILITY

Donald H. Hosken, 20171 Cherry La., Saratoga, Calif. 95070

Filed Mar. 6, 1979, Ser. No. 17,940

Int. Cl.³ G02B *5/12*

U.S. Cl. 350—99 **8 Claims**



1. Reflective apparatus comprising:

first reflector means having a plurality of prismatic structures for reflecting light;

second reflector means relatively positioned in front of said first reflector means with respect to a predetermined observation point and having a plurality of prismatic structures having surfaces with reflective and transmissive characteristics for reflecting a portion of incident light striking thereon and for transmitting therethrough a portion of said incident light to strike said first reflector means; and

third means for movably coupling said first and second reflector means and for allowing the relative movement of said first and second reflector means.

4,316,652

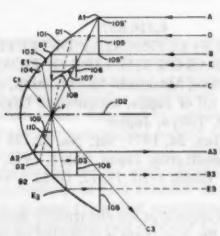
PHANTOM ELIMINATOR FOR SIGNAL LIGHTS

John H. Auer, Jr., Fairport, and David Birnbaum, Pittsford, both of N.Y., assignors to General Signal Corporation, Stamford, Conn.

Filed Nov. 5, 1979, Ser. No. 91,314

Int. Cl.³ G02B *17/00*

U.S. Cl. 350—276 R **6 Claims**



1. A signal light for reducing phantom signals and comprising in combination;

a. a deep-dish reflector for collecting and focusing light and having an optical axis and a focal point;

b. said reflector configured to cause light rays entering and signal light from an external source and in a direction parallel to said optical axis to impinge on said reflector and be reflected through said focal point;

c. said reflector further configured to cause light rays which are reflected through said focal point, and which thereafter impinge on said reflector, to be reflected so as to emerge from said signal light in a direction substantially parallel to said optical axis; and

d. means comprising at least part of a planar surface whose plane is normal so that of said optical axis and which is positioned within said signal for intercepting at least some of the light rays from said external source which would otherwise impinge on said reflector before and after passing through said focal point and emerge from said signal light in a direction substantially parallel to said optical axis.

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CONDENSER OPTICAL SYSTEM FOR A MICROSCOPE

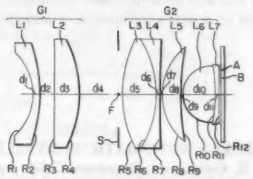
Yoshiyuki Shimizu, Miura, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Mar. 12, 1979, Ser. No. 19,600

Claims priority, application Japan, Mar. 20, 1978, 53-31132

Int. Cl.³ G02B *9/34, 9/60, 21/08*

U.S. Cl. 350—465 **10 Claims**



1. A condenser optical system having high magnification and good optical compensation properties for a microscope comprising, in order from the light ray entrance side:

a forward group including a negative lens component and a positive lens component, said negative lens component being a negative meniscus lens component having its surface of sharper curvature facing the light ray entrance side, and said positive lens component having its surface of sharper curvature facing the light ray exit side; and

a rearward group having a totally positive refractive power, the rearward group including, in order from the light ray entrance side, a biconvex first positive lens component, a first negative lens component cemented to said biconvex first positive lens component, a meniscus-shaped positive lens component having its convex surface facing the light ray entrance side, a biconvex third positive lens component having its surface of sharper curvature facing the light ray entrance side, and a second negative lens component cemented to said third positive lens component and having a plane surface facing the light ray exit side, the air separation between said forward group and said rearward group being smaller than the total center thickness of said rearward group, and the front focus of said rearward group lying in said air separation.

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EYEGLASS FRAME WITH POCKET CLIP

Charles B. Allen, 5 Briarfield La., Huntington, N.Y. 11743

Filed Mar. 3, 1980, Ser. No. 126,770

Int. Cl.³ G02C *3/00, 5/14, 1/00*

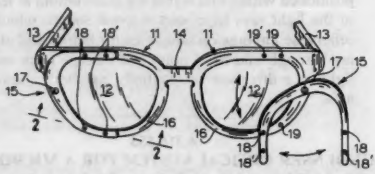
U.S. Cl. 351—155 **10 Claims**

1. An improved frame for eyeglasses, comprising:

a pair of interconnected rims, each of which is configured to surround and support an eyeglass lens, said rims each having a top, bottom and two side segments which cooperatively define an outer surface; and

at least one clasp superimposed over at least about ¼ of the outer surface of one of said rims and secured to the side segment thereof which is distal to the other of said rims,

said clasp being configured and dimensioned to correspond to the configuration and width of the portion of the outer surfce over which it is superimposed, said clasp having a central section which normally overlies said distal side segment and two arms extending from opposite ends of said central segment which normally overlie at



least a portion of said top and bottom segments of the associated rim, said clasp also being generally spaced above said portion of said outer surface to permit a portion of a user's garment to be inserted between said clasp and said rim and so as to effect releasable securement of said frame to a user's garment so inserted therebetween.

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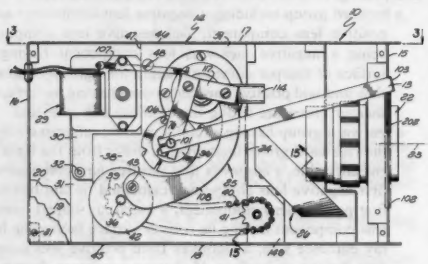
ADJUSTABLE AUTOMATIC SURVEILLANCE CAMERA

Norman R. Gunderson, Pasadena, Calif., assignor to American Electronics, Inc., Fullerton, Calif.

Filed Mar. 18, 1980, Ser. No. 131,099
Int. Cl.³ G03B *1/00*
U.S. Cl. 352—166 **12 Claims**



1. A camera comprising:

a camera body for containing a strip of film which advances from a first roll of the film to a second roll past an exposure location;

lens means for focusing an image on the film at said exposure location;

shutter means;

an exposed film spool on which said second roll of film is wound;

mechanism operable to turn said spool intermittently to successively advance different frames of the film to said exposure location, including a rotatively movable element and an adjustable drive structure for acting against said element at variable distances from its axis to vary the angle through which the spool rotates on each operation; and

sensing means responsive to changes in the diameter of one of said rolls and controlling adjustment of said drive structure in a relation varying the angle of rotation of said spool on an individual operation in accordance with such changes in diameter.

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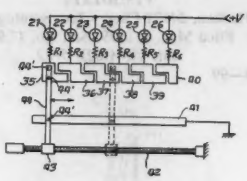
INFORMATION DISPLAY ARRANGEMENT FOR CAMERA

Takao Ishibashi, Higashiyamato, and Kenjiro Osonoi, Tokorozawa, both of Japan, assignors to Osawa Precision Industries, Ltd., Tokyo, Japan

Division of Ser. No. 39,994, May 17, 1979, Pat. No. 4,279,481.
This application Oct. 20, 1980, Ser. No. 198,838
Claims priority, application Japan, May 22, 1978, 53-67845
Int. Cl.³ G03B *1/60*
U.S. Cl. 352—172 **9 Claims**



1. A film supply quantity display for a camera comprising:

film transport means;

a support rod connected to said film transporting means and rotatable upon operation of said film transporting means;

a movable member carried by said rod and movable by said rod from one end of said rod to the other as the film supply of the camera changes from a full film supply to the end of the film supply in response to operation of said film transporting means;

a plurality of film supply quantity indicators arranged in a linear array representing film supply quantity;

a plurality of fixed contacts, each of said fixed contacts being connected to respective ones of said quantity indicators, each of said fixed contacts that is connected to a quantity indicator that is between indicators at the ends of said array having a predetermined shape, means providing selective overlapping electrical contact between adjacent one of said fixed contacts;

a battery supply means;

movable contact means affixed to said movable member for actuating said quantity indicators by electrically coupling to said battery supply in accordance with the position of said movable member along said rod by selective contact with said fixed contacts, whereby said movable contact means contacts two adjacent ones of said fixed contacts when said movable member is at position along said rod corresponding to distance proportional to the film supply quantity between the quantity represented by two adjacent quantity indicators.

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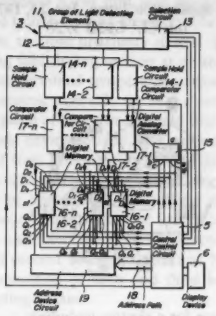
APPARATUS FOR ELECTRICALLY DETECTING FOCAL POINT OF CAMERAS OR THE LIKE OPTICAL DEVICES

Takeomi Suzuki, Tokyo; Masatoshi Ida, Hachioji, and Hideyuki Kenjyo, Koganei, all of Japan, assignors to Olympus Optical Company Limited, Tokyo, Japan

Filed Jun. 26, 1979, Ser. No. 52,225
Claims priority, application Japan, Jul. 3, 1978, 53-79741
Int. Cl.³ G03B *3/10, 19/12;* G01J *1/44*
U.S. Cl. 354—23 D **2 Claims**

1. In an improved apparatus for electrically detecting a focal point of cameras or the like, there is provided an optical device comprising, a plurality of light receiving elements arranged to receive light from at least one portion of an object image formed by an optical system and delivering a photoelectric signal, an analog-digital converter for converting a photoelectric signal from the light receiving elements into a digital signal and a control circuit for treating the digital signal and detecting an in-focal condition of the optical system, wherein the improvement comprises: a plurality of sample hold circuits

connected to the plurality of light receiving elements and being operative to sample hold in parallel the photoelectric signal from the light receiving elements, a plurality of comparator circuits connected to said sample hold circuits and operative to compare in parallel the photoelectric current delivered from



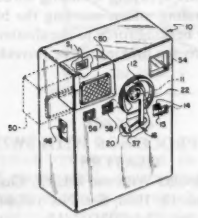
said sample hold circuits with an analog reference signal obtained from a digital-analog converter and changing in a step-shaped manner, and a plurality of digital memories connected to said comparator circuits and operative to write in parallel a digital signal delivered from the control circuit.

4,316,658

CAMERA FOR CLOSE-UP AND NORMAL RANGE PHOTOGRAPHY

John J. Bundschuh, Penfield, and Gerald J. Kosarko, Pavilion, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 9, 1981, Ser. No. 232,767
Int. Cl.³ G03B *3/00, 7/087*
U.S. Cl. 354—27 **6 Claims**



1. In a camera having means for selecting either a flash exposure mode or an ambient exposure mode, an adjustable mechanism for setting an exposure aperture, energizable means for controlling said adjustable mechanism to set an exposure aperture, a photosensor exposed to ambient light, a movable member, and circuitry, including switch means controlled by said movable member, for operatively coupling said photosensor to said energizable means, said circuitry being effective in response to movement of said member to cause said energizable means to assume (1) a first condition when the ambient light exposing said photosensor is below a predetermined level, to establish a relatively large exposure aperture, and (2) a second condition when the ambient light is above the predetermined level, to establish a restricted exposure aperture, the improvement comprising:

(a) lens apparatus adjustable for varying the focus setting of said camera;

(b) actuatable means for setting said lens apparatus to (1) a first focus setting condition for focusing on a close subject, and (2) a second focus setting condition for focusing on a remote object; and

(c) override means, coupled to said actuatable means, responsive to the setting of said lens apparatus to its first condition for causing said adjustable mechanism to establish a restricted exposure aperture, independently of whether a flash exposure mode or an ambient exposure mode is selected, thereby enhancing depth of field whenever said lens apparatus is set for close-up photography and the ambient light is below the predetermined level.

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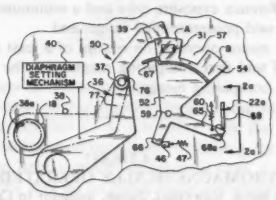
INFRARED FILTER EXPOSURE COMPENSATION APPARATUS

Steven D. Daniels, Byron, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 80,375, Oct. 1, 1979, abandoned. This application Oct. 22, 1980, Ser. No. 199,150
Int. Cl.³ G03B *7/087, 15/03*
U.S. Cl. 354—42 **5 Claims**



5. In a camera having exposure-determining means, including a photoresponsive device, for controlling an exposure as a function of visible light and infrared radiation impinging upon said photoresponsive device, and flash means controllable for making an exposure either by ambient illumination or by flash illumination, the improvement comprising:

(a) an infrared-attenuating filter for respectively covering and uncovering said photoresponsive device;

(b) a mechanism having first and second conditions depending upon whether ambient light is bright or dim, respectively;

(c) means for sensing whether or not said flash means is to be used for making an exposure; and

(d) means controlled jointly by said sensing means and said mechanism for causing said infrared-attenuating filter to cover said photoresponsive device when flash illumination is to be used in bright ambient light, and for causing said infrared-attenuating filter to uncover said photoresponsive device when flash illumination is to be used in dim ambient light.

4,316,660

ALARM DEVICE IN AN AUTOMATIC EXPOSURE CAMERA

Yoshiakai Ohtsubo, Kawasaki, and Sakuji Watanabe, Warabi, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

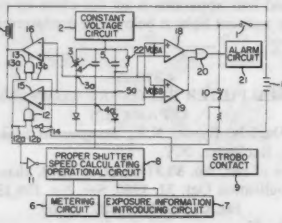
Filed Apr. 14, 1980, Ser. No. 139,769
Claims priority, application Japan, May 1, 1979, 54-52472
Int. Cl.³ G03B *7/083, 17/18*
U.S. Cl. 354—50 **3 Claims**

1. An alarm device provided in a camera including means for selecting exposure time in response to the brightness of an object to be photographed, a device for controlling exposure according to the selected exposure time, and means for setting a reference exposure time suitable for flash photography, the alarm device producing alarm when said selected exposure time is beyond a predetermined range, the improvement comprising:

(a) first comparing means which produces an output when a value subtracting a reference exposure time from said selected exposure time is greater than a difference between

said reference exposure time and a maximum exposure time within said predetermined range;

(b) second comparing means which produces an output when a value subtracting said selected exposure time from said reference exposure time is greater than a difference between



said reference exposure time and a minimum exposure time within said predetermined range; and

(c) alarm means operable on receipt of a least one of the outputs of said first comparing means and the output of said second comparing means.

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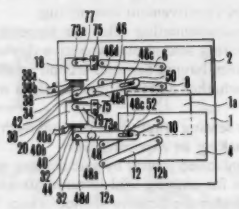
ELECTROMAGNETICALLY OPERATED SHUTTER

Syuichiro Saito, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 6, 1980, Ser. No. 147,299
Claims priority, application Japan, May 10, 1979, 54/57479
Int. Cl.³ G03B 9/08
U.S. Cl. 354—234 **4 Claims**



1. An electromagnetically operated shutter comprising:

(a) leading and trailing shutter blades;

(b) electromagnetic drive means for said leading shutter blade;

(c) electromagnetic drive means for said trailing shutter blade; and

(d) driving force transmitting means arranged between said shutter blades and said electromagnetic drive means to transmit the driving force of said drive means to said shutter blades;

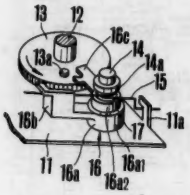
whereby said driving force transmitting means are pivotally mounted with their ends on opposite sides of their respective pivot axes, said transmitting means being operatively connected to said electromagnetic drive means and said shutter blades respectively so that said drive means and said shutter blades are caused to move in opposite directions to each other, said driving force transmitting means being constructed in the form of levers having their ends engaging respective moving parts of said electromagnetic drive means in rotatably fitted relation to each other, said electromagnetic drive means being supported in such a manner that they turn about respective pivot axes as said transmitting means are turned.

4,316,662

BRAKE DEVICE FOR SHUTTER

Yoichi Tosaka, Tokyo; Teiji Hashimoto, Kawasaki, and Nobuo Tezuka, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 16, 1980, Ser. No. 112,699
Claims priority, application Japan, Jan. 31, 1979, 54-10920[U]
Int. Cl.³ G03B 9/28
U.S. Cl. 354—241 **9 Claims**



1. A brake device for a shutter including:

(a) a shutter driving shaft movable in response to a shutter operation;

(b) a shutter driving member attached to the shutter driving shaft;

(c) a ground plate;

(d) a stationary member mounted on said ground plate and positioned in the region of the shutter driving shaft;

(e) a brake member fitted on the stationary member for rotation relative to the stationary member,

said brake member comprising an elastic material, and having an engagement portion engageable with said shutter driving member so that a friction force developed between the elastic brake member and the stationary member provides a braking force to the shutter driving member when the shutter driving member engages with the engagement portion; and

(f) biasing means for applying a biasing force to said brake member, said biasing means exerting the biasing force to provide another braking force to the shutter driving member in addition to the braking force provided by the friction force.

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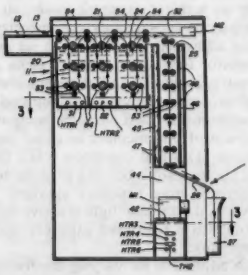
X-RAY FILM PROCESSOR WITH SWITCHING HEATERS

Warren G. Fischer, 4N003 Wildrose Rd., St. Charles, Ill. 60174

Filed Jul. 11, 1980, Ser. No. 168,645
Int. Cl.³ G03D 3/13
U.S. Cl. 354—299 **25 Claims**



1. In an X-ray film processor having:

(A) a first tank for containing a developer solution;

(B) a second tank for containing a fixer solution;

(C) first and third heating means, operable on electrical current, in close proximity to one and to the other of said first and second tanks, respectively, for maintaining a solution in said one tank and said other tank at or above a first and a third predetermined temperature, respectively;

(D) a drying section with drying means for removing liquids form a processed X-ray film, said drying means including second and fourth heating means, operable on said electrical current, in close proximity to said drying section, for maintaining said drying section at or above a second and fourth predetermined temperature, respectively; and

(E) motive means, operable on said electrical current, for moving a piece of film through said first tank, said second tank and said drying section, said motive means being able to move at least 125 pieces of film of size 14 inches by 17 inches through said solutions and drying means in an hour,

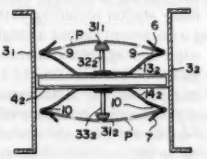
the improvement comprising controlling means, coupled to said first and second and third and fourth heating means, for preventing the simultaneous operation of both said first heating means and said second heating means and for preventing the simultaneous operation of both said third heating means and said fourth heating means.

4,316,664

CONVEYANCE SYSTEM INCORPORATED IN PHOTOGRAPHIC TREATMENT APPARATUS FOR LONG LENGTH PHOTOSENSITIVE MATERIAL

Kanichi Nishimoto, Wakayama, Japan, assignor to Noritsu Koki Co., Ltd., Wakayama, Japan

Filed Jan. 28, 1980, Ser. No. 116,242
Claims priority, application Japan, Feb. 2, 1979, 54-10302
Int. Cl.³ G03D 3/13
U.S. Cl. 354—321 **6 Claims**



1. A conveyance system adapted for conveying a long length strip of photographic printing paper through photographic treatment equipment in which said photographic paper is subjected to a series of developing and associated steps after completion of exposure thereof, said conveyance system comprising:

(a) means for guiding both edges of said strip through said system, said guiding means including means defining guiding grooves which are adapted to extend along the length of said strip and to receive the edges of said strip;

(b) means for moving said strip through said system, said moving means including at least a first and second pair of cooperating rollers, the rollers of each pair being adapted to engage the edge of said strip between them and said first pair being adapted to engage one edge of said strip within said guiding grooves and said second pair being adapted to engage the other edge of said strip within said guiding grooves, and

(c) means for engaging a face of said strip along at least a substantial portion along said length of said strip, said engaging means being adapted to increase the rigidity against warping of said strip by bending said strip into the cross sectional form of an arch extending between said guiding grooves.

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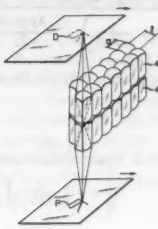
PROJECTION DEVICE

Noritaka Mochizuki, Yokohama; Setsuo Minami, Kawasaki; Yoshiya Matsui, Yokohama; Koyo Midorikawa, Tokyo; Atsuo Tsunoda, Fuchu; Hidetoshi Murase; Mikio Suzuta, both of Yokohama, and Masazumi Moriwaki, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 6, 1979, Ser. No. 100,858
Int. Cl.³ G03B 27/00
U.S. Cl. 355—1 **11 Claims**



1. A projection device comprising:

a pair of bar lenses having a greater length in the direction of the optical axis thereof as compared with the effective diameter thereof, said bar lenses controlling, by aperture eclipse, the light intensity distribution over a predetermined partial area on an image plane corresponding to a partial area of an object, said light intensity distribution being weaker in light intensity in the marginal area thereof than in at least the central area thereof; and

a holding means connecting said pair of bar lenses and which attenuates and extinguishes unnecessary light rays which reach the portion of said bar lenses other than the effective diameter areas thereof, wherein said pair of bar lenses satisfy the following lens equations:

for the first bar lens:

$$K_1 \times (n_1' - 1) \times \frac{\beta_1 S_1}{(1-\beta_1) - \frac{S_2'}{\beta_1 S_1}} \leqq r_1 \leqq K_2 \times (n_1' - 1) \times \frac{\beta_1 S_1}{(1-\beta_1) - \frac{S_2'}{\beta_1 S_1}}$$

$$K_2 \times (1 - n_2') \times \beta_1 S_1 \leqq r_2 \leqq K_1 \times (1 - n_1') \times \beta_1 S_1 K_1 \times n_1' \times \beta_1 S_1 \leqq d_1' \leqq K_2 \times n_1' \times \beta_1 S_1 K_1 \times \frac{-S_1/Fe}{\sqrt{1-\left(\frac{1}{2Fe}\right)^2}} \leqq \phi_1 \leqq K_2 \times \frac{-S_1/Fe}{\sqrt{1-\left(\frac{1}{2Fe}\right)^2}} K_1 \times \phi_1 \times \frac{\left(\frac{S_2'}{\beta_1}\right) - S_1}{\beta_1 S_1} \leqq$$

$$\phi_0 \leqq K_2 \times \phi_1 \times \frac{\left(\frac{S_2'}{\beta_1}\right) - S_1}{\beta_1 S_1} K_1 = 0.9, K_2 = 1.1$$

where r_1 and r_2 represent the curvature radii of the object side surface and the image side surface of the first bar lens, d_1' represents the thickness of the lens on the optic axis thereof, ϕ_1 represents the effective diameter of the lens, ϕ_0 represents the size of the object, n_1' represents the refractive index for design wavelength, β_1 represents the lateral magnification, S_1 represents the distance from the object side surface to the object surface along the optic axis, S_2' represents the distance from the image side sur-

face to the intermediate image plane along the optic axis, and Fe represents the object side effective F-number; for the second bar lens:

$$K_1 \times (1 - n_2') \times \frac{S_4'}{\beta_2} \leqq r_3 \leqq K_2 \times (1 - n_2') \times \frac{S_4'}{\beta_2} K_2 \times$$

$$(n_2' - 1) \times \frac{S_4'/\beta_2}{1 - \left(\frac{1}{\beta_2}\right) - \frac{S_3 \times \beta_2}{S_4}} \leqq r_4 \leqq K_1 \times$$

$$(n_2' - 1) \times \frac{S_4'/\beta_2}{\left(1 - \frac{1}{\beta_2}\right) - \frac{S_3 \times \beta_2}{S_4'}} K_1 \times (-n_2') \times$$

$$S_4'/\beta_2 \leqq d_2' \leqq K_2 \times (n_2') \times S_4'/\beta_2 K1 \times \frac{S_4'/Fe'}{\sqrt{1 - \left(\frac{1}{2Fe'}\right)^2}}$$

$$\leqq \phi_3 \leqq K_2 \times \frac{S_4'/Fe'}{\sqrt{1 - \left(\frac{1}{2Fe'}\right)^2}} K_1 \times \phi_3 \times$$

$$\frac{S_3\beta_2 - S_4'}{S_4'/\beta_2} \leqq \phi_4 \leqq K_2 \times \phi_3 \times \frac{S_3\beta_2 - S_4'}{S_4'/\beta_2} K_1 = 0.9, K_2 - 1.1$$

where r_3 and r_4 represent the curvature radii of the object side surface and the image side surface of the second bar lens, d_2' represents the thickness of the lens on the optic axis, ϕ_3 represents the effective diameter of the lens, ϕ_4 represents the size of the projected image, n_2' represents the refractive index for design wavelength, β_2 represents the lateral magnification, S_3 represents the distance from the object side surface to the intermediate image plane along the optic axis, S_4' represents the distance from the image side surface to the projected image plane along the optic axis, and Fe' represents the image side effective F-number.

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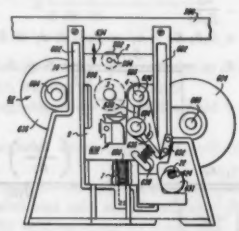
APPARATUS FOR TRANSFERRING A TONER IMAGE

Theodorus M. Ceelen, Laverne, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 24, 1979, Ser. No. 60,072
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 TR **2 Claims**



1. In an apparatus for transferring an image from the surface of an insulating member into a lamination, of the type having a first spool for supplying adhesive material, a transfer roll for pressing said adhesive material against said image, the adhesive material being fed between the insulating member and the transfer roll, thereby transferring the image from the insulating member to the adhesive material, a second spool for supplying backing material, and drive and idler rollers to press together the adhesive and backing material which is fed between said drive and idler rollers, to form a lamination over the image, the improvement comprising:

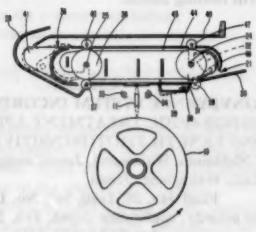
an actuating mechanism mechanically coupled to said transfer roll and either said drive or idler roller for simultaneously (a) moving said transfer roll toward or away from said insulating member to allow or prevent contact of said image and said adhesive material, and (b) moving said drive and idler rollers together or apart, respectively, to allow the backing material and adhesive material to form a lamination, or to allow the loading of said backing and adhesive material.

4,316,667

COPIER AND RECIRCULATING DOCUMENT FEEDER

Earl G. Edwards, Boulder; Jerry T. Robinson, Longmont, and Bernard L. Wilzbach, Berthoud, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 19, 1980, Ser. No. 122,164
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 SH **11 Claims**



1. A copier and moving document feeder, comprising:

a document entry station including entry alignment means for aligning a document against a longitudinally extending reference edge and against a laterally extending closed document gate;

a stationary imaging station, including an extension of said longitudinally extending reference edge, located on the side of said document gate opposite said entry station, for line-scanning an original document moving therepast;

a skewed turn-around guide formed as a partial cylinder whose cylindrical axis is not perpendicular to said reference edge, so as to cause the leading-edge corner of a document which is adjacent said reference edge extension to traverse a shorter distance while passing through said turn-around guide than does the remainder of the leading edge, to thereby skew the leading edge of such a document without introducing a force which may disturb registration of the portion of the document then remaining in said imaging station;

a document return path located downstream of said skewed turn-around guide and generally above said imaging station, including a further extension of said longitudinally extending reference edge, and operable to receive such a document having its leading edge now skewed;

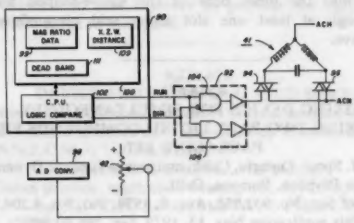
further alignment means located within said document return path and operable to realign such a document against said further extension of the longitudinally extending reference edge after the trailing edge of the document has passed through said imaging station; and

a nonskewed turn-around guide located downstream of said further alignment means and operable to direct the leading edge of a document into the aligning influence of said entry alignment means and into said document gate after the document's trailing edge has passed through said imaging station.

4,316,668
IMAGE REDUCTION SERVO SYSTEM

William G. Miller, East Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 3, 1980, Ser. No. 203,174
Int. Cl.³ G03B 27/52
U.S. Cl. 355—55 16 Claims

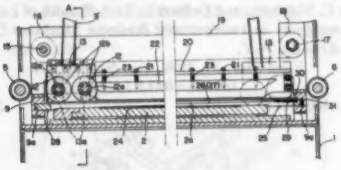


1. A reproduction machine for producing copies of a document selectively at one of a plurality of copy image magnification ratios including
a photosensitive surface,
a magnification selector
an optical arrangement for projecting images onto the photosensitive surface at a selected magnification,
a control with associated memory, the improvement comprising
means for reading a word from memory corresponding to the selected magnification ratio,
means manifesting the current magnification ratio position of the optical arrangement,
means to compare the selected magnification ratio with the current magnification ratio position manifestation, and
means responsive to the comparison to change the optical arrangement to the selected magnification ratio.

4,316,669
EXPOSURE APPARATUS

Tatsuo Tachiki, Toyonaka, Japan, assignor to Kabushiki Kaisha Kaneda Kikai Seisakusho, Osaka, Japan

Filed Apr. 10, 1980, Ser. No. 138,780
Claims priority, application Japan, Apr. 17, 1979, 54-51787[U]; Apr. 17, 1979, 54-51788[U]
Int. Cl.³ G03B 27/20
U.S. Cl. 355—91 5 Claims

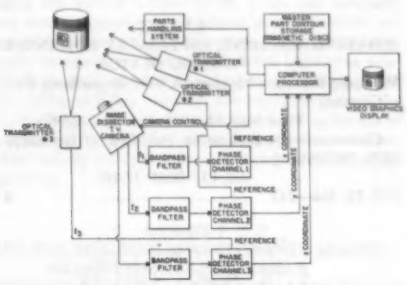


1. An exposure apparatus comprising a fixed baseboard (2) having a plate receiving surface (2*a*) in a horizontal or substantially horizontal position for holding a photosensitive plate (24) in intimate contact therewith by the suction of a vacuum pump, means (33, 5) for feeding the photosensitive plate (24) to the fixed baseboard (2) from one end thereof, means (6, 34) disposed in alignment with the feeding means (33, 5) for delivering the plate (24) from the fixed baseboard (2) toward the other end thereof after exposure, a frame (9) for withdrawably setting a negative film (27) and a flexible but stiff, transparent sheet (26) in place with the sheet superposed on the film, and an exposure light source (4) provided with a reflecting mirror (3) and disposed immediately above the fixed baseboard (2), means mounting said setting frame (9) for upward and downward movement relative to said fixed baseboard, at least one squeegee roll mounted on said setting frame for rolling movement on the upper surface of said transparent sheet to press out air from between the negative film (27) and the photosensitive plate (24) after the setting frame (9) has moved downward to superpose the film (27) on the plate (24) held in intimate contact with the receiving surface (2*a*) of the baseboard (2), and
means (10, 11) are provided on opposite sides of the fixed baseboard (2) for moving the setting frame (9) upward and downward while holding the frame (9) positioned in parallel to the baseboard (2),
the photosensitive plate (24) being feedable to the fixed baseboard (2) by the feeding means (33, 5) and dischargeable from the baseboard (2) by the delivering means (6, 34) after exposure when the setting frame (9) is moved upward by the moving means (10, 11), the squeegee roll (12) being rollingly movable to press out the air and make the photosensitive plate (24) ready for specified exposure when the setting frame (9) is moved downward by the moving means (10, 11).

4,316,670
APPARATUS AND METHOD FOR DETERMINING THE CONFIGURATION OF A REFLECTIVE SURFACE

Richard R. Corwin, Xenia, and Stephen L. Moorman, Miamisburg, both of Ohio, assignors to Beta Industries, Inc., Dayton, Ohio

Filed May 29, 1979, Ser. No. 43,442
Int. Cl.³ G01B 9/02
U.S. Cl. 356—349 31 Claims



1. Apparatus adapted for determining the contour of a light reflecting surface, comprising laser transmitter means for producing a light beam, means for expanding the beam and for projecting at least one fringe pattern onto the surface with the pattern moving in a predetermined direction and at a predetermined frequency, receiver means for observing different selected points on the surface and for producing an oscillatory signal corresponding to a fringe pattern component reflected by each surface point, means for determining the phase of the signal corresponding to each selected point with respect to the phase of a reference point, and means responsive to the phase of the signal for each selected point on the surface for determining a coordinate of the selected point.

4,316,671
APPARATUS FOR CONTINUOUS MIXING OF SOLIDS AND LIQUIDS

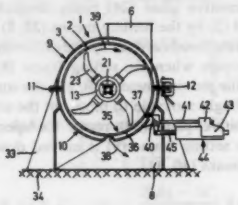
Werner Christen, and Helmut Müller, both of Mannheim, Fed. Rep. of Germany, assignors to Draiswerke GmbH, Mannheim, Fed. Rep. of Germany

Filed May 28, 1980, Ser. No. 154,098

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1979, 2923502

Int. Cl.³ B01F *7/04, 15/02*

U.S. Cl. 366—192 **5 Claims**



1. An apparatus for the continuous mixing of solids with liquids preferably for the application of glue to chips, fibers or powered materials, comprising:

a cylindrical mixing container, material feed means at one end of said container and material outlet means at the other end of said mixing container;

means for admitting glue into said mixing container;

at least one mixing shaft mounted coaxically within said mixing container, said shaft being provided with mixing tools for axially propelling material through said container in the form of a ring of material;

a drive motor for driving said shaft;

a throttle valve in said material outlet means, said valve being provided with a positionable counterweight and operatively associated therewith;

means for adjusting the position of said counterweight; and

said means for adjusting the position of said counterweight is a motor means (**44**) and said counterweight is formed by a housing (**43,48**) of said motor means (**44**).

4,316,672
SHAKING MACHINE, ESPECIALLY FOR INDIAN INK WRITING DEVICE

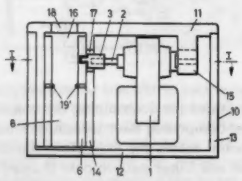
Wolfgang Kerscher, Moosweg 8, 8400 Regensburg, Fed. Rep. of Germany

Filed May 24, 1979, Ser. No. 42,047

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1978, 7817065[U]

Int. Cl.³ B01F *11/00*

U.S. Cl. 366—212 **4 Claims**



1. A shaking machine comprising:

(a) a housing;

(b) a guide bore inside said housing;

(c) a holder formed by a sleeve-shaped body;

(d) said holder being adapted for holding at least one Indian ink writing device;

(e) said holder being slidably guided in said guide bore for reciprocating movement therein parallel to the axis of said guide bore;

(f) means for reciprocating said holder in said guide bore;

(g) means for clamping said at least one Indian ink writing device in said holder, wherein said means for clamping comprises an elastic ring held in a circumferential groove of said holder, at least a portion of said elastic ring extending into the inner bore of the sleeve-shaped holder through at least one slot along said circumferential groove.

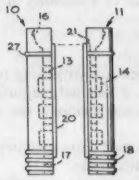
4,316,673
MIXING DEVICE FOR SIMULTANEOUSLY DISPENSING TWO-PART LIQUID COMPOUNDS FROM PACKAGING KIT

Spencer J. Speer, Ontario, Calif., assignor to General Dynamics, Pomona Division, Pomona, Calif.

Division of Ser. No. 932,053, Aug. 8, 1978, Pat. No. 4,204,775. This application Nov. 13, 1979, Ser. No. 93,360

Int. Cl.³ B01F *5/06*

U.S. Cl. 366—337 **14 Claims**



1. A disposable fluid mixing device comprising:

a first and a second structure, said structures being mirror images of each other;

each of said structures being of substantially semi-cylindrical form and having means providing a molded, tortuous path therethrough mating with the tortuous path of the other structure;

at least one semicircular ridge molded on the outside of said structure to provide means for retaining an associated element to be coupled thereto; and

means for securing said structures to each other.

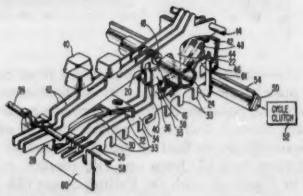
4,316,674
KEYLEVER PAWL TUBE SPRING AND KEYBOARD UTILIZING A KEYLEVER PAWL TUBE SPRING

Charles C. Mayborg, and Delbert L. Teel, II, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 31, 1980, Ser. No. 136,001

Int. Cl.³ B41J *5/14*

U.S. Cl. 400—478 **2 Claims**



1. A keyboard comprising:

a plurality of keylevers, each said keylever having a depending support member on said keylever,

an interposer associated with each of said keylevers and having at least a normal position,

a keylever pawl pivotally mounted on each of said keylevers to

transfer motion of said keylevers to said interposers and to, under the influence of said interposers, pivot out of motion transferring relation to allow said interposers to restore to said normal position,

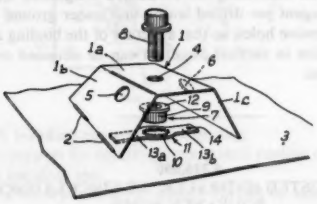
and a resilient deformable, open ended, tubular restore member deformable in cross section by said pawl during said pivoting of said pawl, said member being supported by said depending support member, and positioned with the axis thereof transverse to said keylever to provide the only resilient restore force to said pawl.

4,316,675

DEVICE FOR FASTENING STUD BOLTS

Gaston E. E. Melicque, Mennecy, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, "S.N.E.C.M.A.", Paris, France

Filed Jul. 7, 1980, Ser. No. 165,987
Claims priority, application France, Jul. 27, 1979, 79 19400
Int. Cl.³ B25G *3/00*; E21B *19/16*; F16D *1/00*
U.S. Cl. 403—22 **3 Claims**



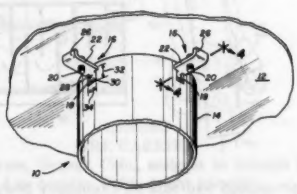
1. Device for the fastening of captive nuts to a structural element wherein the structural element has secured thereto a bridge plate comprising a median wall and two lateral walls, each being provided with a hole, said hole of the median wall being aligned with a threaded hole of the nut intended to receive the threaded part of a threaded bolt and immobilized with respect to rotation in a plate comprising two oppositely extending wings engaged in the holes in the lateral walls of the bridge plate, said nut having a collar between the median wall and the plate.

4,316,676

MECHANICAL JOINT

Charles E. Turner, Richardson, Tex., assignor to Hi-Mark Industries, Inc., Richardson, Tex.

Filed Jul. 1, 1980, Ser. No. 165,102
Int. Cl.³ F16B *7/04*
U.S. Cl. 403—260 **4 Claims**



1. A mechanical joint comprising:

a hollow post having a plurality of apertures spaced at intervals around the circumference of the post adjacent one end of the post, each of said apertures having a dimension across the aperture which is greater than the width of that part of the aperture nearest the closest end of the post;

a plate having a surface which can be brought into abutment with the end of the post having the apertures therein;

a plurality of arms, each arm having one end which is adapted to be positioned radially through the apertures in the post and extend radially therefrom, that end of the arm having a width which is greater than the width of that part of the aperture nearest the closest end of the post and a reduced width waist portion intermediate the ends of the arm which is smaller than the width of that part of the aperture nearest the closest end of the post to permit that end of the arm to be inserted into the aperture and when the waist portion is positioned in the aperture nearest the closest end of the post to prohibit withdrawal of the arm from the aperture, the opposite end of the arm also extending radially from the post; and

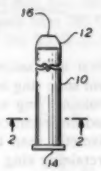
fastening means engaging the radially extending opposite end of the arms and the plate to join the post and the plate in an abutting relationship.

4,316,677

TUBULAR SHANK DEVICE

Armand Ciavatta, 703 Birch Hill Dr., Bridgewater, N.J. 08807

Filed Mar. 7, 1980, Ser. No. 127,959
Int. Cl.³ E21D *21/00*
U.S. Cl. 405—259 **16 Claims**



1. A device stably mountable in unconsolidated underground strata comprising:

a tubular shank having an oblate cross-section, said shank having a length sufficient to stabilize it from loosening in said underground strata, whereby said shank is forwardly drivable into a bore that is sized to transversely compress said shank, said oblate cross-section providing annularly spaced wall engaging peripheral portions for frictionally engaging the wall of a bore in the strata and annularly spaced non-wall engaging peripheral portions which are spaced radially from the wall of the bore, said portions being integrally interconnected in annular force translating relation throughout a substantial portion of the length of the tubular shank such that frictional interengagement with the wall of the bore will result in a radially inward deflection of said wall engaging portions which deflection is accommodated by radially outward deflection of said non-wall engaging portions.

4,316,678

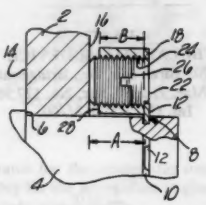
MEANS FOR SECURING TWO ELEMENTS AGAINST RELATIVE AXIAL MOVEMENT

Erwin F'Geppert, Novi, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 5, 1979, Ser. No. 82,398
Int. Cl.³ F16B *9/00*, *2/00*
U.S. Cl. 403—259 **1 Claim**

1. Means to secure a machine part (2) on a shaft (4), comprising a first peripheral abutment (6 or 306) on the shaft to engage one end face of the machine part; a peripheral groove (10) formed in the shaft remote from said abutment; a resilient snap ring (12 or 308) installable in the groove to form a second abutment; an annular one piece retaining ring (18 or 318) insertable on the shaft into the space between the machine part and the second abutment; said retaining ring having a first end face (28) in opposed relation to the machine part and a second

end face (22 or 322) in opposed relation to the second abutment; said second end face of the retaining ring having an annular undercut (20 or 320) at the inner diameter of the ring to mate with the snap ring; said retaining ring having at least three threaded openings extending axially therethrough at spaced locations around the ring periphery; set screws (26 or 326) engaged with the threads in individual ones of the threaded openings for individual advancement against the machine part to force the machine part into tight pressure engagement with the first abutment and the retaining ring into tight pressure engagement with the second abutment; the set screws having lesser lengths than the axial thickness of the retaining ring whereby each screw can be disposed entirely within the retaining ring; the combined axial thickness of the machine part and retaining ring being slightly less than the



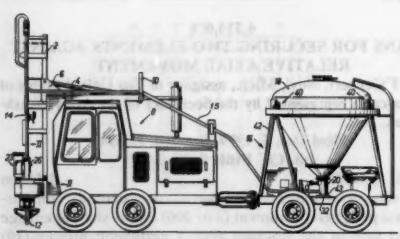
spacing between the first and second abutments to permit installation of the resilient snap ring into the shaft groove after positionment of the retaining ring and machine part on the shaft; the aforementioned undercut on the retaining ring having a slightly larger diameter than the aforementioned snap ring so that when the retaining ring and machine part are in pressure engagement with respective ones of the abutments, the snap ring will be located within the undercut, whereby the snap ring is then prevented from being accidentally radially disengaged from the groove in the shaft; the threaded openings in the retaining ring intersecting the undercut in the second end face of the retaining ring, whereby when the snap ring is located within the undercut the snap ring will cover a portion of each threaded opening to prevent accidental retraction of the set screws out of the threaded openings.

4,316,679

GROUND STABILIZATION EQUIPMENT

Signar Lundmark, and Leif Hällgren, both of Skelleftea, Sweden, assignors to Linden-Alimak AB, Skelleftea, Sweden

Continuation of Ser. No. 845,611, Oct. 26, 1977, abandoned. This application Apr. 13, 1978, Ser. No. 29,765
Claims priority, application Sweden, Dec. 2, 1976, 7613559
Int. Cl.³ E02D 3/12
U.S. Cl. 405—303 **3 Claims**



1. A mobile ground stabilization equipment including a traction and operating vehicle, an earth drill apparatus including an earth drill head, for injecting and mixing a pulverulent binding agent into the earth material during operation of the earth drill head, a supply tank for the pulverulent binding agent, and a device for receiving pressurized air and for feeding out and portioning the pulverulent binding agent blown by the pressurized air into and through a conduit leading from the tank to the earth drill head and through the earth drill head, said equipment including means in the traction and operating vehicle for recording the amount and distribution of pulverulent binding agent injected into the ground, comprising

(a) a first device sensing and generating first signals in response to the passage of peripherally located indicating position devices on a rotatable element included in the drive for the earth drill head, the speed of said rotatable element depending upon the feeding movement of the earth drill head,

(b) a weighing device, included in the mobile equipment, on which the tank rests between vertical guide means and by means of which the contents of the tank are weighed and second signals representative of changes in said contents are generated,

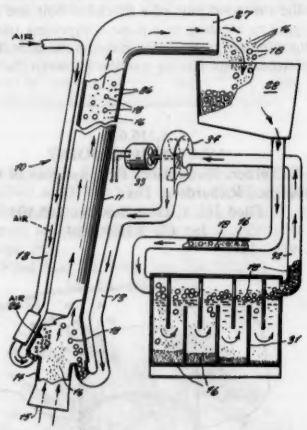
(c) a recorder in which two inputs are driven by the first and second signals, respectively, for providing a graphic representation illustrating the successive weights of fed out binding agent per drilled length unit under ground level for successive holes, so that a picture of the binding agent distribution in vertical direction can be obtained over a large area.

4,316,680

AIR-ASSISTED HYDRAULIC RE-CIRCULATORY BOUYANCY PUMP

Peter Phipps, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Oct. 1, 1979, Ser. No. 80,177
Int. Cl.³ F04F 1/18
U.S. Cl. 406—49 **5 Claims**

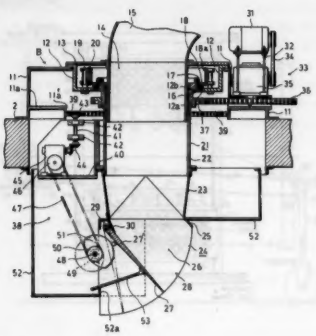


1. An air-assisted hydraulic re-circulatory bouyancy pump comprising in combination a set of three pipes alongside each other, a first of said pipes comprising an eduction pipe means for carrying a mined material upward from a sea bottom, a second of said pipes comprising a compressed air pipe means connected to a lower end of said eduction pipe means for supplying compressed air to said eductionn pipe means, and a third of said pipes comprising a pipe means connected to said lower end of said eduction pipe means for supplying a plurality of bouyancy particles to said eduction pipe means.

4,316,681
BLENDING EQUIPMENT

Shozo Sida, Aichi, Japan, assignor to Sansho Kabushiki Kaisha, Japan

Filed Jul. 30, 1979, Ser. No. 62,274
Claims priority, application Japan, Jul. 31, 1978, 53-93476
Int. Cl.³ B65G *53/40*
U.S. Cl. 406—162 1 Claim



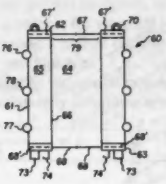
1. A blending equipment comprising:
(i) a support for mounting on a central portion of a ceiling of a blending bin,
(ii) a vertical conveyor airduct carried by said support for rotation about a vertical axis,
(iii) motor means, and a transmission means connecting said motor means to said airduct for rotating said airduct relative to said support, said transmission means including meshed elliptic gears coupled respectively to said motor means and to said airduct such that the angular speed of said airduct varies cyclically during each rotation of said airduct,
(iv) a spreader outlet secured to and rotatable with said airduct, said outlet having a first end opening and a second end opening, said first end opening communicating with said airduct, said second end opening being directed laterally, said outlet including a lower member defining a lower boundary of said second end opening, said lower member being movable for movement up and down of said lower boundary thereby to vary the cross-section, and the direction of discharge relative to the horizontal, of said second end opening,
(v) shifting means carried by said airduct and serving to move said lower member up and down as said airduct is rotated.

4,316,682
ORE CARRIER

Hugh W. Evans, Denver, Colo., assignor to Atlantic Richfield Company, Los Angeles, Calif., a part interest

Division of Ser. No. 123,876, Feb. 25, 1980, Pat. No. 4,247,229.
This application Sep. 22, 1980, Ser. No. 189,560
Int. Cl.³ B65G *51/06*
U.S. Cl. 406—187 4 Claims

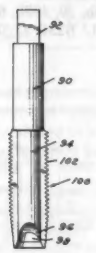
1. An ore carrier comprising a closed, hollow body having side, top, and bottom means, said body being configured to pass through one or more underground shafts, said body containing interiorally thereof at least one ore chamber and at least one buoyancy chamber, said ore chamber extending from said top means to said bottom means, watertight door means in said top means and said bottom means for top loading of said carrier and bottom unloading of said carrier, said door means retracting into said buoyancy chamber when said door means are open for loading or unloading.



4,316,683
SEMI-CIRCULAR THREAD TAP

Lawrence A. Schott, Detroit, Mich., assignor to Roger A. Schott, Redford, Mich., a part interest

Continuation-in-part of Ser. No. 69,289, Aug. 24, 1979, abandoned. This application May 26, 1981, Ser. No. 267,429
Int. Cl.³ B23B *51/00*; B21K *21/00*; B23G *5/06*
U.S. Cl. 408—219 3 Claims



1. In a tap for threading holes in metal:
(a) a cylindrical drive section of steel having an ensmalled mount shank at a working end, the drive section and the mount shank having a radial shoulder therebetween, and
(b) a half-circle tap segment having a half-circle recess on one side to fit the mount shank and a half-circle threaded surface on the other side to form a tap surface, said tap section having a length extending substantially the length of the ensmalled mount shank, said tap segment being brazed on said mount shank with one end against said shoulder.

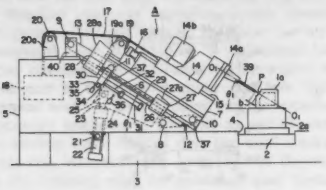
4,316,684
MACHINING UNIT FOR USE IN MACHINE TOOL

Kosei Takeyama, Mishima, Japan, assignor to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 27, 1980, Ser. No. 134,667
Claims priority, application Japan, Mar. 30, 1979, 54-37830
Int. Cl.³ B23B *47/00*
U.S. Cl. 408—236 8 Claims

1. A machining unit for use in a machine tool comprising a slide base support mounted on a base of the machine tool, a slide base located above said slide base support, means slidably mounted on said slide base for working a workpiece, link members pivotably attached to said slide base and said slide base support so as to constitute a quadric link mechanism, and means swingably attached to said slide base support for operat-

ing said quadric link mechanism thereby to move said slide base from a first position wherein said slide base is at a first



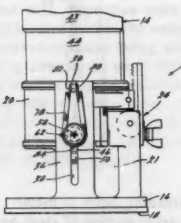
angle of inclination to a second position wherein said slide base is at a second angle of inclination.

4,316,685

PLUNGE TYPE ROUTER

William A. George, Cockeysville, Md., assignor to Black & Decker Inc., Newark, Del.

Filed Feb. 29, 1980, Ser. No. 125,958
Int. Cl.³ B23B *45/02*; B23C *1/20*
U.S. Cl. 409—182 **12 Claims**



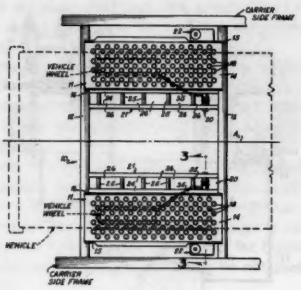
1. In a plunge type router including a base housing having an upper portion, a bore extending through said upper portion, a lower flange portion including a work engaging lower surface, a driving motor assembly including a motor housing extending into said bore, said driving motor assembly including a driving shaft extending outwardly from the lower end of said motor housing, chuck means secured to said shaft for attaching a cutting tool to said shaft, said motor housing being reciprocably movable with respect to said base housing between a retracted position in which said cutting tool is positioned above said work engaging surface and an extended position in which said cutting tool projects downwardly below said work engaging surface, improved means for biasing said motor housing into a retracted position comprising first attaching means provided on said base housing; said base housing including an elongated slot having a longitudinal axis extending generally parallel to the direction of movement of said motor housing; second attaching means provided on said motor housing; said second attaching means including stop means engageable with a portion of said base housing for limiting movement of said motor assembly with respect thereto; said stop means comprising a bushing member received within said slot and engageable with opposite longitudinal ends thereof; and biasing means extending between said first and second attaching means and operative to bias said motor housing into said retracted position.

4,316,686

AUTOMOBILE TIE DOWN ASSEMBLY FOR VEHICLE CARRIERS

Don J. Cottrell, 2164 Hawthorne La., and Don M. Cottrell, Rte. 7, Duckett Mill Rd., both of Gainesville, Ga. 30501

Continuation-in-part of Ser. No. 920,189, Jun. 29, 1978, Pat. No. 4,227,734. This application Sep. 7, 1979, Ser. No. 73,515
Int. Cl.³ B60P *7/08*; B61D *17/00, 45/00*
U.S. Cl. 410—12 **6 Claims**



1. A tie down assembly for selectively securing a wheeled vehicle to a track on a vehicle supporting track assembly in vehicle carriers using an attachment point on the vehicle comprising:

a guide assembly operatively connected to the track on the track assembly, said guide assembly including a pair of spaced apart side members fixedly mounted on the track assembly and extending longitudinally of and adjacent said track and a plurality of guide members attached between said side members at spaced apart positions along the length of said side members to define a series of spaced apart openings along the length of said guide assembly and the track; and

a tie down mechanism operatively connected to the track assembly in operative association with said guide assembly, said tie down mechanism including

a tie down winding shaft rotatably mounted on the vehicle supporting track assembly adjacent the track;

a flexible tie down member having opposed ends, one of said ends connected to said tie down winding shaft so that said tie down member will be wound around said tie down winding shaft as said winding shaft is rotated and the other of said ends adapted to be attached to the attachment point on the vehicle; and

a drive mechanism mounted on the vehicle supporting track assembly and operatively connected to said tie down winding shaft to rotate said tie down winding shaft, said drive mechanism including an input drive member adapted to be engaged and rotated, and gearing means interconnecting said tie down winding shaft and said input drive member so that rotation of said input member rotates said tie down winding shaft, said gearing means constructed and arranged so that said input drive member can be rotated to drive said tie down winding shaft while rotation of said tie down winding shaft to drive said input drive member is substantially precluded

so that that end of said flexible tie down member adapted to be attached to the vehicle can be passed around a selected one of said guide members through the opening associated therewith and attached to the attachment point on the vehicle to establish the angle of the force exerted on the vehicle by the tie down member, and said input drive member manually rotated to rotate said winding shaft and tighten said flexible tie down member to apply said force on the vehicle directed toward the

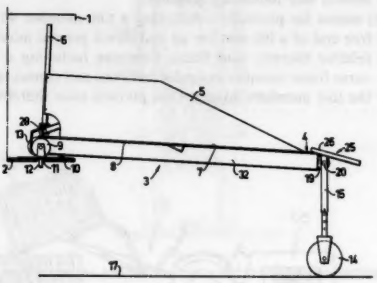
track whose angle is determined by said guide member selected around which said flexible tie down member extends.

4,316,687

LOAD CARRYING DEVICE

Kjell Lindskog, 27 Floravägen, Skelleftea, Sweden S-931 39

Filed Feb. 25, 1980, Ser. No. 124,547
Claims priority, application Sweden, Mar. 1, 1979, 7901869
Int. Cl.³ B60P *1/64*
U.S. Cl. 410—92 **8 Claims**



1. A manually movable load carrying device for vehicles with cargo space, comprising a load table, rollers rotatably mounted on a forward portion of the load table for aiding movement of the load table into and out of the cargo space of the vehicle, pivotal support legs having wheels provided at a first end and being pivotally mounted at a rear end of the load table for pivoting between a transport position and a position for supporting a rear portion of the load table at least when the load carrying device is being moved into and removed from the cargo space of the vehicle, said support legs being pivotable to the support position when the load table is substantially contained within the cargo space, guide grooves formed on a lower surface portion of the load table, carrying rollers mounted in a rear portion of the cargo space and adapted to engage the guide grooves, the support legs having a length which is less than the distance from the floor of the cargo space to the ground in order to effect overbalancing of the load table in relation to the carrying rollers when the center of gravity of the load table passes said rollers, said carrying rollers being capable together with the wheels of the support legs to movably carry the load table as long as the center of gravity of the load table is located between the wheels and the carrying rollers and together with the rollers provided at the forward portion of the load table to movably carry the load table as long as the center of gravity of the table is located between the load table rollers and the carrying rollers.

4,316,688

REINFORCING REMOVABLE POST POCKET TIE-DOWN

Milton Roskelley, 229 Juanita Way, San Francisco, Calif. 94127

Filed Jan. 2, 1980, Ser. No. 109,048
Int. Cl.³ B60P *7/06, 7/13;* B61D *45/00*
U.S. Cl. 410—102 **12 Claims**

1. A removable post pocket tie-down, removably insertable into a post pocket of a vehicle for securing loads to the vehicle, said post pocket including a pair of opposing sheet metal sidewalls comprising in combination:

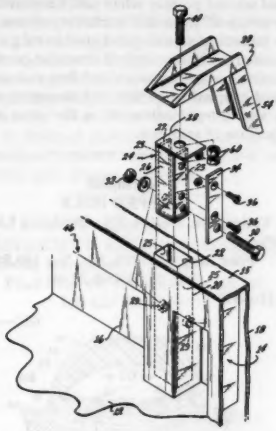
post means including an elongated member of such size and shape as to be removably insertable into a post pocket and to fit snugly when inserted therein, and including a pair of opposing surfaces adjacent said opposing sidewalls;

securing means for retaining said post means within said post pocket; and,

means for exerting inward force upon said sheet metal sidewalls to thereby draw said opposing sidewalls against said opposing surfaces of said snugly fitting post means, whereby said sheet metal and said post means are mutually reinforced to strengthen the removable tie-down assembly.

10. A removable post pocket tie-down, removably insertable into a post pocket of a vehicle for securing loads to the vehicle, said post pocket including a pair of opposing sheet metal sidewalls comprising in combination:

post means including an elongated member of such size and shape as to be removably insertable into a post pocket and



to fit snugly when inserted therein and including a pair of opposing surfaces adjacent said opposing side walls;

tie-down means removably affixed to said post means;

securing means for retaining said post means within said post pocket; and,

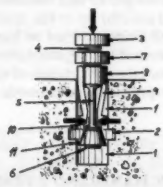
means for exerting inward force upon said sheet metal sidewalls to thereby draw said opposing sidewalls against said opposing surfaces of said snugly fitting post means, whereby said sheet metal and said post means are mutually reinforced to strengthen the removable tie-down assembly.

4,316,689

ANCHORAGE SYSTEM OF THE ELEMENTS TO BE SUPPORTED ON THE COMPLETED STRUCTURE

Vicente Sanchez Velasco, Canillas, 93 Madrid-2, Spain

Filed Oct. 9, 1979, Ser. No. 82,754
Claims priority, application Spain, Oct. 6, 1978, 474.022
Int. Cl.³ F16B *13/04*
U.S. Cl. 411—57 **9 Claims**



1. In an anchorage system for construction elements such as a wall adapted for insertion into a hole formed in said wall, the combination comprising an anchoring sleeve, an end piece and means for temporarily connecting said anchoring sleeve to said end piece when said anchoring sleeve and said end piece are inserted into said hole, said hole extending into said wall and

being formed with a first portion projecting from the surface of the wall, an intermediate second portion further extending into the wall and a third portion forming the bottom of the hole, said second portion having a diameter relatively larger than the diameters of said first and third portions; said anchoring sleeve including a clamping portion terminated with radially outwardly extended projections, whereby when said anchoring sleeve and said end piece are inserted into said hole, said clamping portion is retracted to enable said projections to be placed into said second portion of said hole upon radial expansion of said projections and said end piece clamps said projections in said second portion when said temporarily connecting means are removed from said anchoring sleeve, said connecting means including an elongated stud having a head portion, a first threaded portion, a second threaded portion and a narrowing portion located between said first and second threaded portions and adapted to permit said clamping portion of said anchoring sleeve to be retracted as the same is inserted into said first portion of said hole.

4,316,690

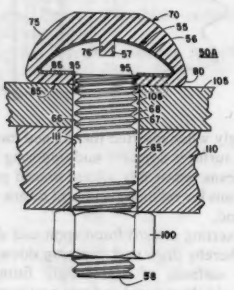
CAPPED BOLT

Ronald L. Voller, Rte. 1 - Box 279 - Bordeaux La., Lake Grove, Ill. 60047

Filed May 14, 1980, Ser. No. 149,848

Int. Cl.³ F16B *23/00*

U.S. Cl. 411—377 **9 Claims**



1. A bolt for a combination bolt and nut fastener for holding a plurality of members in predetermined spaced relation, said bolt comprising a shank having machine threads thereon adapted to receive a nut thereon, a bolt head laterally larger than said shank having a radially extending, planar lead surface, a synthetic organic resin cap capable of cold flow deformation substantially surrounding said bolt head, said synthetic organic resin cap having an annular lip depending axially downwardly therefrom with a portion thereof in contact with said planar lead surface and another portion thereof extending laterally inwardly toward said shank and having an inwardly facing surface, the length of said inwardly facing surface from the free end of said annular lip to the juncture thereof with said planar lead surface being at least as long as the distance between said juncture and the adjacent thread root such that the free end cold flows into the threads of said shank upon deformation of said lip providing a hermetic seal when the nut is tightened.

4,316,691

ROUND BALE HANDLING ATTACHMENT FOR A TRACTOR

Joseph B. Kucera, Traer, Iowa, assignor to Rudolph L. Lowell, Des Moines, Iowa, a part interest

Filed Mar. 24, 1980, Ser. No. 133,472

Int. Cl.³ A01D *87/12*; B66F *9/19*

U.S. Cl. 414—24.5 **2 Claims**

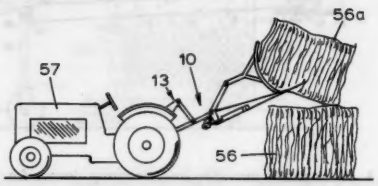
1. A round bale handling attachment for a tractor having a pair of transversely spaced vertically movable pivoted lift arms projected longitudinally of and outwardly from one end of the tractor, comprising:

(a) a frame structure mountable on the free ends of said lift arms including a pair of transversely spaced tine members extending longitudinally outwardly from the lift arms,

(b) a bale unloading member movably supported on said frame structure for movement longitudinally of said tine members in riding engagement on the upper surfaces thereof,

(c) power means on said frame structure for moving the bale unloading member from a first bale loading position to a second bale unloading position,

(d) means for pivotally connecting a tine member with the free end of a lift arm for up and down pivotal movement relative thereto, said frame structure including a transverse frame member extended between and connectable to the tine members adjacent the pivoted ends thereof,



(e) means for limiting the downward pivotal movement of said tine members to positions extended longitudinally of said lift arms, including a bracket unit at the pivoted end of each tine member having a stop member located below and engageable with the bottom side of an adjacent lift arm to define said longitudinally extended positions,

(f) said tine members, when lowered by said lift arms to positions resting on a ground surface, being pushed upwardly relative to said lift arms for movement along the ground in a following relation therewith, and, when elevated by said lift arms out of ground engagement, are pivotally movable as a unit with the lift arms in said longitudinally extended positions therefor, and

(g) coacting means on said bracket unit and frame member for releasably securing said frame member with said tine members at a position below said lift arm stop members.

4,316,692

SPREADING DEVICE FOR LAMINATION STACKS

Rolf Schwab, Bischofsheim, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 12, 1979, Ser. No. 57,019

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1978, 2832123

Int. Cl.³ B65H *9/10*

U.S. Cl. 414—27 **3 Claims**

1. A spreading device for insertion into a hole in a stack of laminations to align the stack for use in an electric machine comprising:

a ring for supporting said stack of laminations;

a mandrel passing through the ring and adapted to pass through said hole in the lamination stack supported on the ring, the mandrel adapted to be displaced axially relative to the ring;

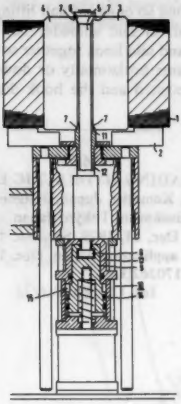
a first conical surface connected to the mandrel;

a second conical surface facing the first conical surface and adapted to be displaced towards the first conical surface;

sector pieces, adapted to fit into the hole of the lamination stack and to contact the lamination stack, each sector piece having end faces and each end face carrying a bevel for engaging one of the conical surfaces; and

a hydraulic drive coupled to the mandrel and to the second

conical surface for axially displacing the conical surfaces towards each other by the same amount, whereby the



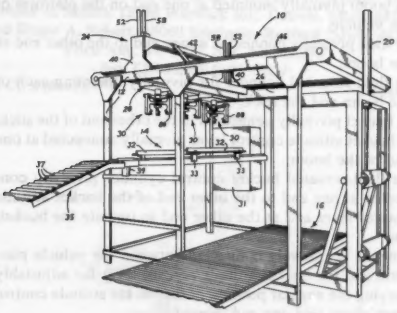
sector pieces are forced outward to align the laminations in the stack.

4,316,693

VARIABLE ARRAY CAN PALLETIZER

Donald J. Baxter, and George J. Kolin, both of Vancouver, Wash., assignors to Columbia Machine, Inc., Vancouver, Wash.

Filed Mar. 5, 1979, Ser. No. 17,179
Int. Cl.[3] B65G *57/03, 57/32*
U.S. Cl. 414—59 3 Claims



1. Apparatus for transferring a plurality of articles from a receiving station to a stacking platform to form on the platform a preselected array of articles, comprising

a transfer carriage shiftable in a substantially horizontal path between positions overlying said station and said platform,

subcarriage mounted on said carriage for vertical shifting relative thereto,

subcarriage shifting means for shifting said subcarriage between raised and lowered positions,

a pair of carriers, each mounted on said subcarriage for shifting in a substantially horizontal path relative to said subcarriage,

carrier shifting means for selectively shifting said carriers, including first powered positioning means operatively interconnecting said subcarriage and one of said carriers for producing selected shifting therebetween, and second powered positioning means operatively interconnecting said one carrier and an adjacent carrier for producing selected shifting therebetween

a pair of article-gripping devices, each device including a powered assembly mounted on an associated carrier for substantially vertical displacement relative thereto to accommodate downward travel of said carrier with respect to said device when the device initially contacts an article to be transferred, and gripping members operatively connected to said assembly for movement, under the control of the associate assembly, between gripping and release positions,

sensing means operatively associated with at least one of said assemblies for sensing such downward travel of said carrier with respect to said device, and

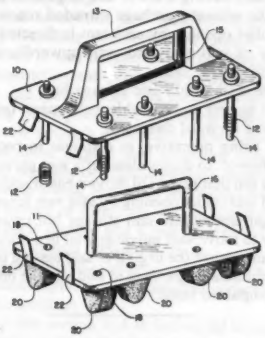
control means operatively connecting said sensing means with said subcarriage shifting means and said powered assemblies, for controlling shifting of said subcarriage toward its lowered position and movement of said gripping members between their gripping and release positions, upon such sensing occurring.

4,316,694

WIDE-MOUTH ARTICLE UNLOADING

Melvin S. Martin, Martindale, Pa. 17549

Filed May 18, 1979, Ser. No. 40,243
Int. Cl.[3] B65G *59/10*
U.S. Cl. 414—120 19 Claims



1. An unloader for stacked, hollow, open-topped articles, comprising:

a first means on one portion of the unloader for engaging a portion of the interior of a hollow article, including elastomeric means responsive to engagement with interior wall surfaces of the article as said first means is inserted into the article to hold the article thereon with sufficient retentive force to overcome gravitational forces acting on the article; and

a second means for disengaging the hollow articles from said first means by engagement with the interior bottom surface of the article.

4,316,695

GARBAGE COMPACTION TRUCK

John W. Knight, Sr., Box 355, Rte. #5, Osage, Iowa 50461

Filed Jan. 7, 1980, Ser. No. 109,819
Int. Cl.[3] B60D *1/00*
U.S. Cl. 414—517 8 Claims

1. A garbage compaction apparatus comprising,

a packer housing including a top wall, bottom wall, opposite side walls and forward and rearward end walls, said housing including a compacted garbage storage bin and a loose garbage receiving bin situated forwardly of said storage bin,

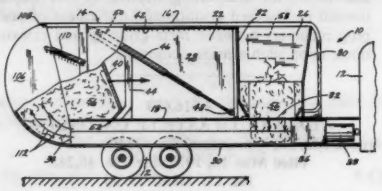
a packing channel having an inlet opening in communication with said receiving bin for receiving garbage therefrom and an outlet opening in communication with said storage bin for delivering garbage thereto,

said packing channel comprising an elongated tube extended longitudinally of said storage bin adjacent said bottom wall, said outlet opening comprising an open rearward end of said tube and being positioned adjacent a rearward portion of said storage chamber,

a ram reciprocally movable within said packing channel,

means for moving said ram between a retracted position wherein garbage may be received into said channel through said inlet opening and a compacting position wherein said garbage received in said channel is moved toward said outlet opening,

said outlet opening facing said rearward wall and said rearward wall comprising an arcuate generally semi-cylindri-



cal surface having a lower end in general alignment with said tube whereby garbage extruded rearwardly through said outlet opening by said ram is directed along the periphery of said rearward wall upwardly and forwardly into said storage bin,

a movable wall within said storage bin,

means for biasing said movable wall against retracting movement in a forward direction,

said ram being operative, in response to reciprocal movement thereof, to accumulate sufficient garbage within said storage bin that rearward movement of additional garbage toward said outlet opening by said ram forces the accumulated garbage within said storage bin upwardly and forwardly to move said movable wall in a retracting forward direction against the urging of said biasing means whereby said accumulated garbage in said storage bin is maintained in a compacted state.

4,316,696

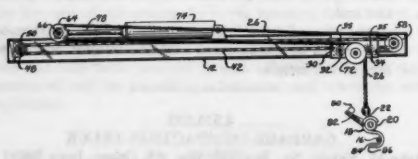
MECHANISM FOR TRANSFERRING CERTIFIED WEIGHTS FROM AND INTO A VEHICLE

William H. Hoyerman, c/o General Body Co., 5838 N. Pulaski Rd., Chicago, Ill. 60646

Filed Mar. 7, 1980, Ser. No. 128,186

Int. Cl.³ B60P *1/54*; B66C *1/38*

U.S. Cl. 414—542 **8 Claims**



1. A device for safely supporting a weight block having a pick-up bar on the end of a cable, which device automatically disengages from the block when deposited upon a support at a desired location, comprising:

a support cable;

means for reciprocating said cable both horizontally and vertically;

a spreader bar pivotally suspended from said cable and having a hook rigidly secured to said bar and outstanding therefrom with an open ended bight which may engage and lift upon a pick-up bar in the weight block, the free end of said hook being shaped to point upwardly from horizontal when so engaged and lifting; and

a counterweight on said spreader bar which pivots said spreader bar and said hook together so that the free end of said hook points horizontally or downwardly when the weight is deposited and the hook disengaged from said pick-up bar.

4,316,697

FRONT-LOADING HYDRAULIC EXCAVATOR

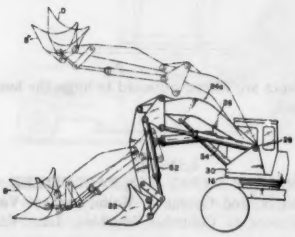
Masao Yokoyama, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Dec. 11, 1979, Ser. No. 102,366

Claims priority, application Japan, Dec. 13, 1978, 53-153059; Dec. 13, 1978, 53-170362[U]

Int. Cl.³ E02F *3/28*

U.S. Cl. 414—694 **9 Claims**



1. A fluid-actuated excavator comprising:

(a) a vehicle having an undercarriage and a platform rotatably mounted on the undercarriage;

(b) a boom pivotally mounted at one end on the platform of the vehicle;

(c) a stick pivotally connected at one end to the other end of the boom;

(d) a fluid-actuated cylinder for pivotally operating each of the boom and the stick;

(e) a bucket pivotally connected to the other end of the stick;

(f) a bucket attitude control lever pivotally connected at one end of the boom;

(g) a fluid-actuated bucket control cylinder pivotally connected at one end to the other end of the bucket attitude control lever and at the other end to operate the bucket; and

(h) means operatively connected between the vehicle platform and the bucket attitude control lever for adjustably varying the angular position of the bucket attitude control lever about said one end thereof;

(i) whereby a desired attitude of the bucket can be established by adjusting the angular position of the bucket attitude control lever about said one end thereof by the adjustably varying means.

4,316,698

FLUID-DRIVEN TURBINE WITH SPEED REGULATION

Val O. Bertoia, R.D. #1, Barto, Pa. 19504

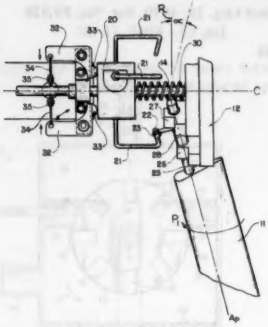
Filed Aug. 23, 1979, Ser. No. 69,164

Int. Cl.³ F03D *7/04*

U.S. Cl. 416—11 **14 Claims**

1. A fluid-driven turbine comprising: a rotatable carrier element; a plurality of wings; means mounting the wings in fixed downwind coned relation with respect to the plane of rotation of the carrier element, said mounting means including pivot means for pivoting each wing about the longitudinal axis thereof; means for biasing the wings to a starting pitch orientation in which the wings are angularly oriented relative to the

plane of rotation by an amount which maximizes wind produced rotational forces on the wings, said wings being moveable from the starting pitch orientation towards a neutral pitch orientation, said mounting means further including means for



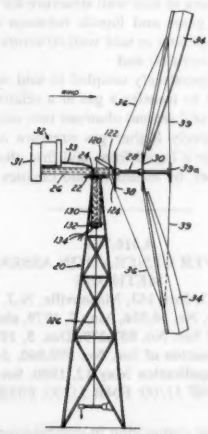
securing the wings to the pivot means at points located forward of the center of gravity thereof, whereby centrifugal forces on the wings arising from rotational motion urge the wings against the action of the biasing means toward the neutral pitch position.

4,316,699

WINDMILL STRUCTURE AND POWER GENERATOR

Lawrence A. Schott, 15940 Warwick Rd., Detroit, Mich. 48223, and Roger A. Schott, 15060 Seminole, Redford, Mich. 48239

Filed Aug. 24, 1979, Ser. No. 69,290
Int. Cl.³ F03D *1/06, 7/04*
U.S. Cl. 416—139 **3 Claims**



1. In a windmill for developing power for use in energy devices of the type having vanes movable around a radially disposed mounting mast, that improvement which comprises:

(a) a windvane comprising two elongate triangular sheets of relatively rigid non-flaccid material each having a straight side edge and a slightly curved convex side edge joined by a base side edge, said sheets being joined at the convex side edges to form a windvane having in cross-section a concave-convex configuration, and

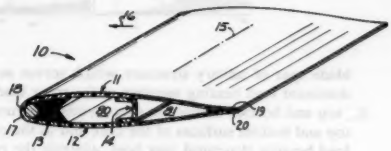
(b) mast means positioned in parallel relation to one of said straight side edges to mount said windvane for rotation about said mast on an axis.

4,316,700

UNITARY, BONDED-TOGETHER HELICOPTER ROTORBLADE

Burford J. Schramm, 1330 East Fremont Dr., Tempe, Ariz. 85204

Filed Apr. 3, 1979, Ser. No. 26,653
Int. Cl.³ B64C *27/46*
U.S. Cl. 416—226 **8 Claims**



1. A unitary, bonded-together helicopter rotor blade having a longitudinal axis, comprising:

a single individual monolithic spar member comprising a longitudinally extending counterweight member, a root member attached to said counterweight member, a retention means retained by and projecting laterally from said root member and spaced from said counterweight member, a plurality of longitudinally-extending fibers having substantial tensile strength gathered to form a group, and as a group doubled around said retention means, and bonding means bonding said counterweight member, root member, retention means, and fibers into a solid body, said spar member having an exteriorly curved longitudinally-extending forward surface and a pair of external shaper surfaces adjacent to said forward surface;

an individual longitudinally-extending spacer with a pair of external abutment surfaces, said abutment surfaces facing away from one another;

an individual top skin section and an individual bottom skin section, each skin section extending laterally and having a leading edge, said leading edges abutting one another, an inside surface bonded to said forward surface, to one of said shaper surfaces, and to one of said abutment surfaces, and a trailing edge, said trailing edges being bonded to one another, said shaper member being rearwardly spaced from said spar member and forwardly spaced from said trailing edges, whereby to leave an empty region between the skin sections to the rear of said spar member on both sides of the spacer member, the said skin surfaces being self-reinforced, and devoid of laterally-extending reinforcement on their surfaces.

4,316,701

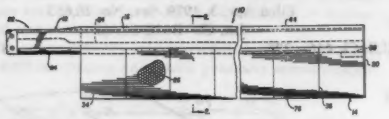
COMPOSITE AERODYNAMIC ROTOR BLADE ASSEMBLY

Thomas S. Scarpati, Mt. Laurel, N.J., and Robert J. Ford, Bromall, Pa., assignors to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 718,543, Aug. 30, 1976, abandoned. This application May 8, 1978, Ser. No. 903,451
Int. Cl.³ B64C *27/46*
U.S. Cl. 416—226 **21 Claims**

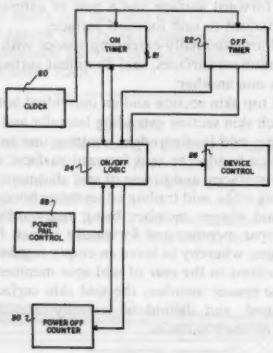
1. An aft fairing structure for a composite aerodynamic rotor blade assembly which includes a partially completed elongated composite load bearing structure spar member, the aft fairing structure comprising:

(a) a core having top, bottom, front, rear and side surfaces;
(b) an elongated composite load bearing structural spar heel secured to the front surface of the core and being spanwise coextensive with the partially completed composite load bearing structural spar member, said composite load bearing structural spar heel having a configuration complemental with the partially completed composite load bearing structural spar member for forming in assembly with the partially completed composite load bearing structural spar member a complete composite load bearing rotor



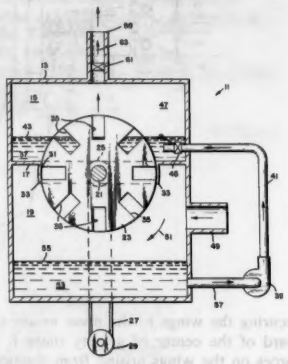
blade spar of unitary structure which serves as the predominant load bearing member of the rotor blade; and
(c) top and bottom composite skin members secured to the top and bottom surfaces of the core and to the composite load bearing structural spar heel, wherein the composite load bearing structural spar member, the composite load bearing structural spar heel and the composite skin members are fabricated of pre-impregnated fiber material which is structuralized by the application of heat and pressure.

4,316,702
OIL WELL CONTROL CIRCUIT
John W. Kiowski, Denton, and John V. Rolando, Dallas, both of Tex., assignors to Electronic Systems Division, Geosource, Inc., Houston, Tex.
Filed Mar. 17, 1980, Ser. No. 130,977
Int. Cl.[3] F04B *49/00*
U.S. Cl. 417—12 **10 Claims**



1. In an oil well pump control system of the type having presettable clock means for cycling a pump through a normal pump sequence of on and off intervals, the improvement comprising:
power outage detection means for generating timing signals in response to the loss of power and restoration of power to the pump;
power outage timing means responsive to said timing signals for generating a control signal representative of the time period of the power loss to the pump; and
override means responsive to said control signal for overriding the pump sequence and maintaining the pump on for a period of time having a proportion to the time period of the loss of power to the pump which corresponds to the proportion between said on time interval and said off time interval.

4,316,703
GAS COMPRESSOR
Richard D. Kunzelman, 3627 Garnet #24, Torrance, Calif. 90503
Filed Oct. 29, 1979, Ser. No. 89,529
Int. Cl.[3] F04F *11/00*
U.S. Cl. 417—66 **18 Claims**



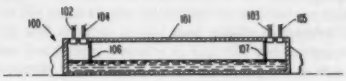
1. A gas compressor, comprising:
a housing having first and second chambers separated by a wall structure;
a wheel rotatably mounted in said housing and extending through an opening in said wall structure and into both said first and second chambers, said wheel including cavities therein;
seal means disposed in said housing including a liquid disposed in said first chamber and seal structure associated with said opening in said wall structure for restricting the movement of gases and liquids between said chambers through said opening in said wall structure other than by means of said cavities; and
rotation means operatively coupled to said wheel for rotating said wheel to transfer a gas at a relatively lower gas pressure from said second chamber into said first chamber having a relatively higher gas pressure and to simultaneously transfer a liquid from said first chamber into said second chamber, by means of said cavities.

4,316,704
FLOATING POWER GENERATION ASSEMBLIES AND METHODS
Peter C. Heidt, P.O. Box 163, Masonville, N.J. 08054
Continuation of Ser. No. 36,556, May 7, 1979, abandoned, which is a continuation of Ser. No. 857,279, Dec. 5, 1977, abandoned, which is a continuation of Ser. No. 590,960, Jun. 27, 1975, abandoned. This application May 12, 1980, Ser. No. 148,777
Int. Cl.[3] F04F *11/00*; F04B *35/00*; F03B *13/12*
U.S. Cl. 417—100 **1 Claim**

1. A prime mover comprising in combination
(1) a pair of floats,
(2) articulating means connecting each float of the pair to the other;
(3) linkage means fixedly mounted upon each float of the pair and adapted to do useful work upon the relative displacement of either float about said articulating means;
(4) a central longitudinal hollow chamber formed within each float coextensive therewith, said chamber being

filled partially with a body of liquid having a free surface coextensive with the chamber;

(5) at least two longitudinal air tanks formed within each float coextensive therewith and spaced apart by said central chamber, whereby upon displacement of one end of a float the liquid contained in the central hollow chamber



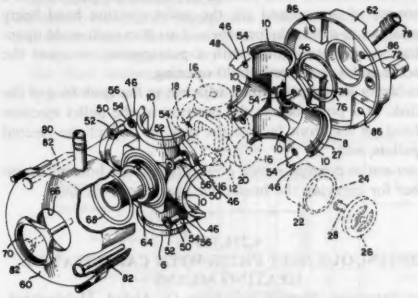
moves to the opposite end of the float, thereby accumulating energy proportional to the displacement.

4,316,705

HOUSING ASSEMBLY FOR SPLIT CRANKCASE RADIAL COMPRESSOR

Herbert G. Siewert, Sylvania, Ohio, assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed Nov. 30, 1979, Ser. No. 98,910
Int. Cl.[3] F16J 10/02; F04B 1/04
U.S. Cl. 417—273 14 Claims



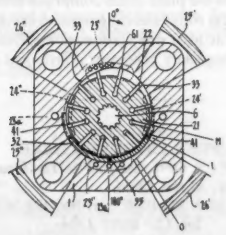
1. In a radial compressor of the type including a crankcase having a plurality of radially oriented cylinders therein, crankshaft means received in said crankcase and positioned centrally of said cylinders, and pistons connected to said crankshaft and received in said cylinders for reciprocating movement, said crankcase being of the split-type comprising two halves joined together at an interface axially intersecting said cylinders, and a housing enclosing said crankcase, said housing comprising two halves mated together along a fluid-tight interface, the improvement comprising a plurality of tie rod means extending within said housing and being connected to said housing halves, said tie rod means clamping said housing halves together.

4,316,706

VARIABLE DISPLACEMENT VANE PUMP WITH NON-FLUCTUATING FLOW

Michael D. Crooke, 120 Rathdowne St., Carlton, 3053, Victoria, Australia

Filed May 29, 1979, Ser. No. 43,135
Claims priority, application Australia, Jun. 1, 1978, PD4579
Int. Cl.[3] F04C 2/00, 15/02
U.S. Cl. 418—16 14 Claims



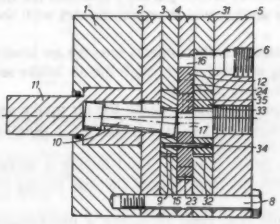
1. A vane pump comprising vanes, a rotor carrying the vanes and which is rotatable about an axis, a housing, means defining a vane running path along which the vanes move, means defining two or more first regions, and two or more second regions of said vane running path to be of non-constant radius relative to said axis and which two or more first regions and two or more second regions vary the radius swept by the vanes as they pass along said two or more first regions and said two or more second regions, an inlet port communicating with two or more inlet zones, an outlet port communicating with two or more outlet zones, two or more forward pumping zones between adjacent inlet and outlet zones, two or more return pumping zones between adjacent outlet and inlet zones, means for varying the angular position of both ends of those pumping zones that are in the areas axially subtended by said two or more first regions in and relative to the area axially subtended by the respective first region whereby to vary the displacement of the pump, wherein both ends of those pumping zones that are in the areas axially subtended by said two or more second regions are fixed in and relative to the area axially subtended by the respective second region, wherein the ends of each of the pumping zones subtend an angle with respect to said axis substantially equal to the angle subtended with respect to said axis by two adjacent ones of said vanes, and wherein the non-constancy of the radius of said two or more first regions and said two or more second regions are such that fluctuating displacements from the pumping zones can be combined to produce a non-fluctuating net flow for all angular positions of said both ends of those pumping zones that are in the areas axially subtended by said two or more first regions in and relative to the area axially subtended by the respective first region.

4,316,707

GEROTOR WITH VALVE PLATE ATTACHED TO ROTOR

Gunnar L. Hansen, and Christian B. Hansen, both of Nordborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Continuation of Ser. No. 959,746, Nov. 13, 1978, abandoned.
This application Mar. 10, 1980, Ser. No. 129,176
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1977, 2752036
Int. Cl.[3] F03C 2/00; F04C 2/10, 15/02
U.S. Cl. 418—60 5 Claims



1. A rotary piston machine comprising a casing having interchangeable fluid inlet and outlet ports, an internally toothed stator member and an eccentrically disposed externally toothed rotor member in meshing engagement, said rotor member having rotational movement about its own axis and orbital movement about the axis of said stator member with the teeth of said members intermeshing in sealing engagement to form a group of expanding cells on one side of a rotating line of eccentricity and a group contracting cells on the other side of said line during relative movement between said members, drive shaft means in said casing connected to said rotor member, a valve plate attached to one side of said rotor member and having a sliding and abutting engagement with said stator member in a transversely extending plane, first and second sets of circumferentially and alternately arranged porting means in said plate for sequential fluid engagement with said cells, said first set of porting means being in constant fluid communication with a first one of said ports and a first group of said cells, said second set of porting means being in constant fluid communication with the second one of said ports and a second group of said cells, a generally annularly shaped recess formed between the periphery of said valve plate and the interior of said casing having fluid communication with said first one of said ports and said first set of porting means, said first set of porting means having flow controlling valving edges in said

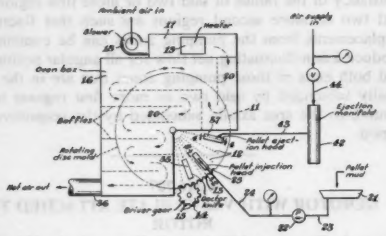
plane which cyclically intersect said cells and are formed by said periphery of said valve plate.

4,316,708

MACHINE FOR CONTINUOUSLY MOLDING SOLID PELLETS FROM A MUD COMPOSITION

Allen G. Skach; David L. Childress, both of Angleton, and William V. Hayes, Clute, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 30, 1977, Ser. No. 811,739
Int. Cl.³ B28B *13/00*
U.S. Cl. 425—73 **5 Claims**



1. A machine for continuously molding solid pellets from a mud composition, the machine comprising:

a disk which is rotatable about a central axis, which has a front face, a back face, and mold openings which extend completely through the disk and which are spaced apart;

a drive means which engages the disk, for rotating the disk;

a housing member which partially encloses the disk;

an air intake section which communicates with the housing member;

a blower means which connects into the air intake section, for forcing ambient air through the air intake section and into the housing member;

a heater means positioned inside the air intake section, for heating the ambient air to a temperature suitable for drying the mud composition;

at least one pellet injection head having a surface which rides against the front face of the disk during rotation of the disk;

the pellet injection head including a passageway therein which is in direct and intermittent communication with a given number of the mold openings during rotation of the disk, and which is connected into a container for the mud composition, the passageway being adapted for directing the mud composition from the mud container directly into the mold openings during rotation of the disk;

at least one backing plate having a surface which rides against the back face of the disk at a point directly opposite to the pellet injection head, the surface of the backing plate thereby blocking the group of mold openings in communication with the pellet injection head;

at least one scraper blade having an edge which rides against the front face of the disk, ahead of the pellet injection head, during rotation of the disk, the scraper blade thereby removing overflow mud which collects on the front face of the disk;

at least one scraper blade having an edge which rides against the back face of the disk, ahead of the pellet injection head, during rotation of the disk, the scraper blade thereby removing overflow mud which collects on the back face of the disk;

a stack of separated baffle plates which are secured to the inside of the housing member, each baffle plate having a central split therein, the split defining a path in which the disk can rotate;

the baffle plate stack providing a means for circulating the heated air along the front and back faces of the rotating disk, to dry the mud composition and thereby form a solid pellet in each mold opening;

at least one pellet ejection head having a surface which rides against the front face of the disk during rotation of the disk; the pellet ejection head having separated passageways therein, each passageway being in intermittent communication with one of the mold openings during rotation of the disk, and each passageway being connected into a source of pressurized air, the pellet ejection head being adapted to direct the pressurized air into each mold opening in communication with a passageway, to eject the solid pellet from each mold opening;

a collector means positioned adjacent to the back face of the disk, at a point below the position of the pellet ejection head on the front face of the disk, to collect the ejected pellets; and

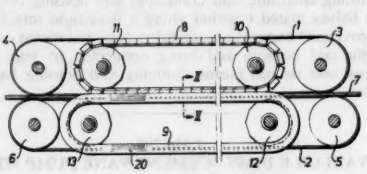
an air outlet conduit which connects into the housing member for carrying the heated air away from the disk.

4,316,709

CONTINUOUS BELT PRESS WITH CAPACITATIVE HEATING MEANS

Stefan Petersson, Skanör, and Sven O. Alstad, Helsingborg, both of Sweden, assignors to Kockums Industri AB, Söderhamn, Sweden

Filed Nov. 21, 1980, Ser. No. 209,099
Claims priority, application Sweden, Dec. 12, 1979, 7910239
Int. Cl.³ B29C *1/00, 3/00*
U.S. Cl. 425—174.8 E **7 Claims**



1. A continuously operating heat-treatment press with dielectric heating of a continuously advanced layer of material under pressure, including for example glue-coated wood chips, said press being of the kind which includes at least one endless, continuously running press chain formed of mutually linked support elements, for maintaining a vertically acting press force on the material layer, wherein the press surface of the support elements in the press chain comprises mutually electrically insulated metal rods extending in the transverse direction of the chain; and at least one stationary electrode plate connected to a high frequency generator is arranged adjacent said metal rods.

4,316,710

DUPLEX EXTRUDER HEAD

Alan Greenwood, Kent, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 24, 1980, Ser. No. 133,367
Int. Cl.³ B29F *3/04*
U.S. Cl. 425—186 **9 Claims**

1. A duplex extruder head comprising:

passage means defining flow passages from each of two extruders to an outlet face;

die means including a die assembly having an upper surface for sealably engaging the outlet face;

slide means for clamping said die means to said outlet face including a pair of gibs having longitudinally extending splines arranged at a small angle relative to said outlet face, a pair of ribs extending transversely of and fixed relative to said passage means each rib having a longitudi-

nal groove extending at said small angle and slidably accommodating the respectively associated gib; and

drive means connected to the slide means and operable to move said gibs to elevate the die means to engage the outlet face and to lower the die means from said face.

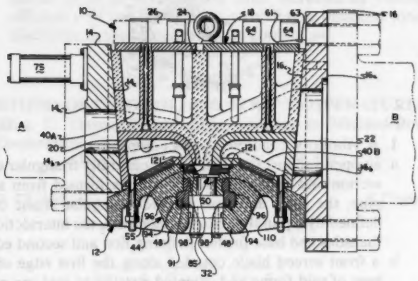
2. A duplex extruder head comprising:

receiver means defining a cavity;

flow passage insert means removably disposed in said cavity and having an outlet face;

die means removably engageable with the outlet face;

and clamp means for securing the insert means in the cavity and comprising a plurality of lugs spaced longitudinally of the insert means and overlying the receiver means, each lug having an upper surface inclined at a small angle



relative to the outlet face, a pair of ledges extending longitudinally of the receiver means and underlying said lugs, and an opposed pair of clamp yokes each having a flange slidably engageable with the respectively associated ledge and a plurality of lugs each having an inclined lower surface inclined at said small angle and parallel to the respective upper surfaces of the first said lugs, the second said lugs being spaced apart sufficiently to allow the first said lugs to pass upwardly therebetween; and forcing means mounted on the receiver means and operable to move the clamp yokes to engage the associated pairs of first and second lugs to secure the insert means in the cavity and oppositely to align the respective second lugs with the spaces

defined by the first lugs to allow removal of the insert means.

4,316,711

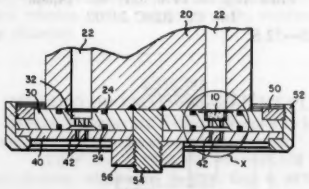
CARTRIDGE FILTER FOR SPIN-PACK ASSEMBLIES

James L. Wellborn, Stuarts Draft, Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 5, 1980, Ser. No. 175,388

Int. Cl.³ D01D *1/10*

U.S. Cl. 425—198 **5 Claims**



1. In a spin-pack assembly for spinning fiber-forming material into filaments, the assembly being of the type that has a spinning block, a filter holder which includes a chamber for containing a filter medium between screens, the chamber having an inlet end in the upper surface of the holder and communicating with a source of fiber-forming material that is supplied through the outlet end of the spinning block and an outlet end communicating with a spinneret plate, the improvement comprising

a cartridge fitted in said chamber, said cartridge having

an upstanding continuous side wall having an inner surface which forms a continuous passage having an inlet end and an exit end which correspond to the inlet and exit ends of the chamber, respectively,

a flange extending outwardly from the inlet end of the side wall, said flange engaging the upper surface of the holder,

a first screen in the inlet end and a second screen in the outlet end of the passage of the side wall, each screen being sealed to the side wall, and

a powdered filter medium being contained in the passage between the inlet and outlet screens.

4,316,712

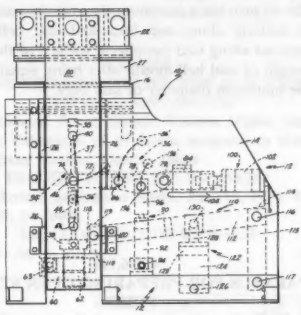
PRESS AND ACTUATOR THEREFOR

Roger L. Medendorp, 34-71st St., Grand Rapids, Mich. 49508

Filed Nov. 10, 1980, Ser. No. 205,530

Int. Cl.³ B29C *17/00, 11/00*

U.S. Cl. 425—292 **23 Claims**



1. A forming press including a main frame, a fixed platen supported on the main frame, a movable platen supported on the main frame for movement towards and away from the fixed platen, and mechanical actuating means for shifting said movable platen from a first, open position to a second, forming position and holding the movable platen in the second, forming position, said mechanical actuating means comprising:

first toggle means mounted on said main frame and operatively connected to said movable platen for moving said movable platen, said first toggle means being movable from a first position at which said movable platen is in its first position to a second position at which said movable platen is in its second position;

shifting means connected to said first toggle means and said main frame for shifting said first toggle means between its first and second positions; and

balance means operatively connected to said movable platen for assisting said shifting means and for assisting in the supporting of said movable platen when said movable platen is in its first position.

4,316,713

DIE FOR PELLETIZING MACHINE

Stanley Trickett, Upton-St-Leonards, England, assignor to Simon-Barron Limited, Gloucester, England

Filed Nov. 7, 1979, Ser. No. 92,034

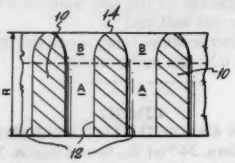
Claims priority, application United Kingdom, Nov. 11, 1978, 44164/78

Int. Cl.³ B29C *3/00*

U.S. Cl. 425—331 **5 Claims**

1. An annular die of the kind having a multiplicity of similar radial through bores through which, in one direction or the

other, material is extruded to form pellets, characterized in that the area of cross-section of each radial bore increases gradually along at least a predetermined part of its length to its end to which material to be extruded is supplied whereby to deliberately form an initial bell-mouth inlet at one peripheral surface of the die, the transition between the portion of increasing cross-sectional area and any outlet portion of constant cross-sectional area and any outlet portion of constant cross-sectional area being entirely smooth, the surface of said bore in the bell-mouth being longitudinally curved with the radius of curvature increasing gradually to infinity at said transition whereby to provide a continuously smooth material engaging surface entirely along said bore and said bell-mouth inlets being spaced along said peripheral surface of the die, and the axial length of said bell-mouth inlet being equal to or greater than the minimum diameter of said bore.



4,316,714

APPARATUS FOR PREPARING OPEN STRUCTURE FIBERS

Ronald E. Pfeiffer, Pensacola, and Francesco DeMaria, Gulf Breeze, both of Fla., assignors to American Cyanamid Company, Stamford, Conn.

Filed Feb. 21, 1979, Ser. No. 13,344
Int. Cl.³ A01J *21/02*
U.S. Cl. 425—382.2 **2 Claims**

1. A spinnerette assembly for spinning open structure fibers which comprises in combination

a. a spinnerette plate containing a plurality of orifices with a counterbore for each orifice and

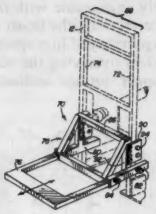
b. removable pins positioned within each orifice-counterbore combination, each pin being of solid construction and having an upper portion positioned within said counterbore and a lower portion positioned within said orifice, said upper portion occupying a fixed position within said counterbore and enabling spinning composition to flow through the counterbore to the orifice at operative back pressure and said lower portion contacting the wall of the orifice at one position while providing clearance at other positions and having suitable shape characteristics to provide an open structure in the extrudate formed.

4,316,715

VIBRATORY CONCRETE SCREED HAVING AN ADJUSTABLE EXTENSION BRACKET

J. Dewayne Allen, Paragould, Ark., assignor to Allen Engineering Corporation, Paragould, Ark.

Filed Apr. 26, 1979, Ser. No. 34,171
Int. Cl.³ E01C *19/38*
U.S. Cl. 425—456 **13 Claims**



1. A vibratory concrete screed comprising:

a. an open support frame having a generally triangular cross section and including an upper apex formed from a top pipe, the sides and base of said triangular frame being defined by a plurality of truss members, the intersection of the sides and base further defining first and second edges;

b. a front screed blade coupled along the first edge of the base of said frame and oriented parallel to said top pipe;

c. a rear screed blade coupled along the second edge of the base of said frame and oriented parallel to said top pipe;

d. means coupled to said screed for imparting vibratory motion to said front and rear screed blades;

e. first and second end brackets coupled to said top pipe and to said front and rear screed blades and having first and second side members defining a plane oriented perpendicular to said front and rear screed blades; and

f. an adjustable extension bracket including;

i. a channel member having first and second ends and a lower surface;

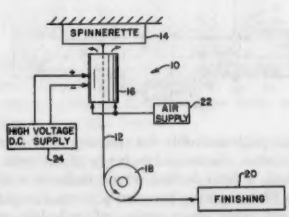
ii. means for coupling the first end of said channel member to said first end bracket at selectable vertical positions while maintaining the lower surface of said channel member in a plane parallel to the plane defined by said front and rear screed blades with the second end of said channel member extending outward from said first end bracket and away from said screed.

4,316,716

APPARATUS FOR PRODUCING LARGE DIAMETER SPUN FILAMENTS

Leroy C. Lin, Richmond, Va., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 16, 1976, Ser. No. 714,866
Int. Cl.³ B29C *23/00*
U.S. Cl. 425—72 S **4 Claims**



1. In combination with an extruder spinnerette having an

orifice from which a molten polymer filament is ejected, apparatus for cooling the molten filament as it exits the spinnerette orifice comprising:

(A) a cold air supply;

(B) a high-voltage, low-amperage D.C. power supply; and

(C) electrostatic cooling means comprising a non-conductive collar mounted proximate and axially oriented to the orifice such that the molten polymer filament passes axially therethrough, said collar having means connected to the cold air supply for receiving cooling air within the collar and directing said cooling air transversely to the direction of filament passage, said collar having cathode and anode electrode pairs arranged radially symmetrically around the filament with the cathode and anode of each pair of being diametrically opposed, said electrodes connected to the power supply to effect increased air cooling efficiency of the filament by providing a balanced ionic discharge in the presence of the cooling air.

4,316,717

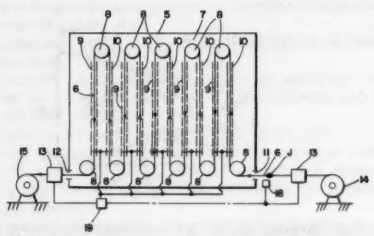
METHOD OF CONTROLLING STRIP TEMPERATURES

William L. Thome, Toledo, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Oct. 27, 1980, Ser. No. 200,775

Int. Cl.³ F27B *9/28*; C21D *9/52*

U.S. Cl. 432—8 **8 Claims**



1. A method of heat treating a pair of joined webs, such as strips or sheets of metal, of dissimilar gauges that require about the same heat treatment temperatures, comprising the steps of:

(a) successively passing the joined webs through a chamber which is heated to a normal processing temperature which is higher than the temperature to which the webs are desired to be heated;

(b) sensing the approach of the juncture outside the chamber, prior to entry of the juncture into the chamber;

(c) reducing the temperature within the chamber from the normal processing temperature to a temperature which is not lower than the temperature to which the webs are desired to be heated, when the juncture is sensed; and

(d) simultaneously reducing the line speed at which the juncture of the webs passes through the chamber in correlated relation to the reduction of the temperature within the chamber.

4,316,718

HEATING OR HEAT-TREATMENT PLANT

Roland Drugge, Malmberget, Sweden, assignor to Luossavaara - Kiirunavaara Aktiebolag, Stockholm, Sweden

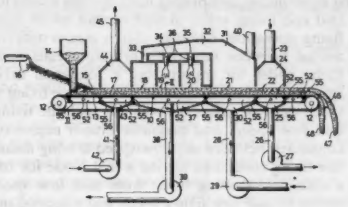
Filed Jun. 4, 1980, Ser. No. 184,158

Claims priority, application Sweden, Sep. 6, 1979, 7907419

Int. Cl.³ F27B *15/00*

U.S. Cl. 432—58 **8 Claims**

1. An arrangement in a plant comprising and endless, perforated belt-type conveyor, means forming heating or heat-treatment zones for a bed of material carried by an upper part of said endless, perforated belt-type conveyor, said upper conveyor part extending through at least one said heating or heat-treatment zone in which heating or heat-treatment gas passes through said upper conveyor part and the bed of material being conveyed thereon and through an optional further layer of gas-permeable material located between said upper conveyor part and said bed, the conveyor including a plurality of mutually-adjacent endless, imperforate belt parts separated by



perforated regions, bearing means for said conveyor, the upper conveyor part being slidably supported along at least substantially the whole of its material-carrying length in the region of said imperforate belt parts by said bearing means which act on the under surface of respective imperforate belt parts and which are completely covered by said belt parts.

4,316,719

FIXING AND HEATING DEVICE FOR ELECTROSTATIC COPYING APPARATUS

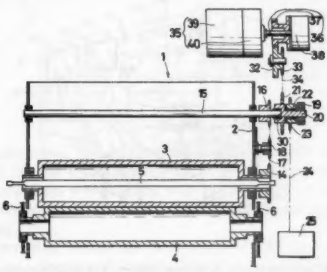
Minoru Motomura, Nara; Kiyoshi Shibata, Osaka, and Toshio Watanabe, Takatsuki, all of Japan, assignors to Mita Industrial Company Limited, Osaka, Japan

Filed Jun. 11, 1980, Ser. No. 158,381

Claims priority, application Japan, Jun. 15, 1979, 54-75886; Jun. 15, 1979, 54-75887

Int. Cl.³ G03G *15/00*; F27B *9/28*

U.S. Cl. 432—60 **4 Claims**



1. A fixing and heating device for fixing a toner image on a copy paper sheet in an electrostatic copying apparatus, said device comprising:

a pair of fixing rollers adapted to pass therebetween a copy paper sheet having thereon a toner image;

heating means for heating a first said fixing roller such that the surface thereof is at a temperature T3 suitable for fixing;

drive means for rotating a least one of said fixing rollers;

temperature detecting means for detecting the actual temperature T1 of said surface of said first fixing roller;

control means, operable in response to the output of said temperature detecting means and operably connected to said drive means, for causing said drive means to stop rotation of said one fixing roller when $T1 < T2$, for causing said drive means to rotate said one fixing roller at a first speed less than a speed suitable for conducting a fixing operation when $T2 \leqq T1 < T3$, and for, when

T1=T3, causing said drive means to rotate said one fixing roller at a second speed suitable for a fixing operation during a fixing operation and at said first speed except during a fixing operation, wherein T2 comprises a predetermined temperature less than T3 and higher than the temperature at which the toner begins to soften;

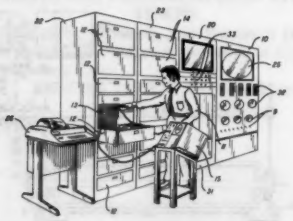
said drive means comprising main driving means for rotating said one fixing roller at said second speed suitable for a fixing operation, one-way clutch means operatively connected between said main driving means and said one fixing roller for transmitting a rotational driving force from said main driving means to said one fixing roller, low speed driving means for rotating said one fixing roller at said first speed, and magnetic clutch means operatively connected between said low speed driving means and said one fixing roller and having a first mode for transmitting a rotational driving force from said low speed driving means to said one fixing roller and a second mode interrupting such transmission; and

said control means comprising means for, when T1<T2, rendering said main driving means inoperative and changing said magnetic clutch means to said second mode thereof, for, when T2≦T1<T3 and when T1=T3 except during a fixing operation, rendering said main driving means inoperative, rendering said low speed driving means operative, and changing said magnetic clutch means to said first mode thereof, and for, when T1=T3 and during a fixing operation, rendering said main driving means operative and changing said magnetic clutch means to said second mode thereof.

4,316,720
MAINTENANCE TRAINING DEVICE

Morris Ackerman, Chevy Chase, Md., assignor to The Singer Company, Binghamton, N.Y.

Filed Mar. 26, 1979, Ser. No. 23,982
Int. Cl.³ G09B 9/00
U.S. Cl. 434—224 **12 Claims**



1. A maintenance training system for teaching students how to repair and maintain electronic systems that contain electronic components which cause certain sounds, data and information to appear on the output devices of said electronic system, said maintenance training system comprising:

a. at least two pluralities of simulated electronic components that are similar to the electronic components contained in said electronic system, the output of the first plurality of said simulated electronic components is coupled to the output devices of said electronic system, and the second plurality of said simulated electronic components is not now coupled to this system;

b. means for preventing signals from occurring at selected outputs of said simulated electronic components;

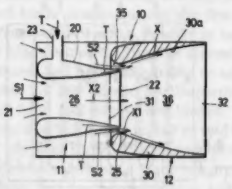
c. a computer coupled to said means, said computer contains a maintenance program; and

d. an instructor controlled input/output device coupled to said computer, said input/output device permits the instructor to enter malfunctions into the computer which will instruct the maintenance program contained in said computer to cause simulated defects to exist on one or more of said simulated electronic components so that the output devices of said electronic system will not function properly, whereby a student will have the opportunity to try and find which one or ones of said first plurality of electronic components are not functioning properly, and when the student finds the one or more of said simulated first plurality of defective components, he will replace that said simulated electronic component contained within said first plurality of electronic components with a similar said second plurality electronic component so that the simulated defect or defects that existed in this system will be removed and the output devices of said electronic system will function properly.

4,316,721
METHOD FOR PRODUCING A THRUST IN MANOEUVERING ENGINES FOR A WATERCRAFT AND A MANOEUVERING ENGINE CONSTRUCTED FOR THE SAME

Friedrich Weiss, Ahrensburg, and Fred Petersen, Hamburg, both of Fed. Rep. of Germany, assignors to Jastram-Werke GmbH KG, Hamburg, Fed. Rep. of Germany

Filed Jul. 14, 1978, Ser. No. 924,666
Claims priority, application Fed. Rep. of Germany, Jul. 16, 1977, 2732223; Jun. 29, 1978, 7819548[U]
Int. Cl.³ B63H 11/02
U.S. Cl. 440—47 **13 Claims**



1. Manoeuvering engine, for watercraft comprising an axially elongated engine having an axially extending front engine part and an axially extending rear engine part, said front engine part comprising an annular duct with the inner surface thereof forming an axially extending suction pipe having an inlet port at one end thereof and an outlet port at the opposite end thereof, said annular duct having an annular discharge slot located at and encircling the outlet port end of said suction pipe, said annular duct at the annular discharge slot being shaped to direct flow therefrom in a direction angularly outward relative to the axis of said suction pipe, said rear engine part comprises a diffuser nozzle overlapping the outlet port end of said annular duct and having an inlet port located at the outlet port end of said suction pipe and an outlet port spaced outwardly from said suction pipe, said inlet port into said diffuser nozzle having a smaller maximum diameter than the diameter of said outlet port thereof and the minimum diameter of said inlet port of said diffuser nozzle having a larger diameter than the diameter of said outlet port of said suction pipe, said inlet port being annular in shape laterally encircling said outlet port of said suction pipe and also encircling said annular discharge slot from said annular duct, said inlet port of said diffuser nozzle forming a suction water jet directed into said diffuser nozzle for spacing the flow from the said annular discharge slot so that it does not experience frictional contact with the inside wall surface of said diffuser nozzle, means for effecting optimum matching of the velocity of the mixing jet exiting from the engine to the speed of the watercraft comprising a device for regulating the cross section of flow through said engine comprising a filling body positioned within said diffuser nozzle and said filling body being axially symmetrical relative to the axis of said engine and having a conically shaped surface extending in the axial direction of said diffuser nozzle between said inlet and outlet ports thereof for forming an

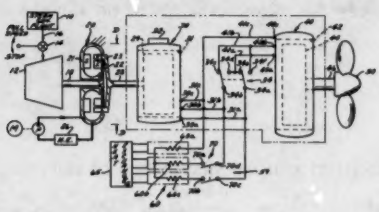
annular outlet cross section from said diffuser nozzle with said filling body being axially displaceable within said diffuser nozzle for varying the annular outlet cross section from said diffuser nozzle.

4,316,722

PROPULSION SYSTEM FOR SUBMARINE

George R. Aschauer, Racine, Wis., assignor to Twin Disc, Incorporated, Racine, Wis.

Filed Jan. 9, 1980, Ser. No. 110,676
Int. Cl.³ B63B *35/00*
U.S. Cl. 440—74 **21 Claims**



1. In a propulsion system operable to effect a rapid reversal maneuver of a ship:

an adjustable speed prime mover rotatable in at least one direction;

a reversible drive mechanism driven by said prime mover and including a fluid-cooled torque converter and speed reduction means;

a propeller driven by said drive mechanism; and

energy-dissipating load means operable during a reversing maneuver after said prime mover speed is slowed, to dissipate kinetic energy from said drive mechanism and said propeller;

said fluid-cooled torque converter being operable during a reversing maneuver after said energy dissipating load means has operated to dissipate kinetic energy and said drive mechanism is placed in reverse, and while said prime mover speed is being increased in said one direction of rotation, to be driven in reverse by said propeller while said ship moves in the original direction of travel, and to dissipate kinetic energy from said propeller until propeller rotation and ship movement cease, whereupon said torque converter drives said ship in reverse.

4,316,723

METHOD AND APPARATUS FOR SEVERING TUBE SECTIONS FROM TUBULAR WEBS AND TRANSPORTING SAME

Werner Decker, Ladbergen, Fed. Rep. of Germany, assignor to Windmöller & Hölscher, Lengerich, Fed. Rep. of Germany

Filed Jul. 9, 1979, Ser. No. 55,955
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1978, 2833233
Int. Cl.³ B65H *45/14*
U.S. Cl. 493—419 **11 Claims**

1. An apparatus for severing tube sections from intermittently fed tubular webs and for conveying severed tube sections in loop form with leading and trailing edges of the tube sections positioned on opposite sides of the loop, said apparatus comprising:

first conveying means for intermittently feeding a tubular web in a feeding direction, said first conveying means defining a web conveying plane and having a downstream end positioned at a first level;

severing means interposed in the conveying plane defined by the first conveying means for severing a tube section from the web;

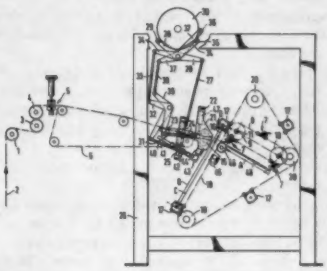
gripping means comprising a circulating endless chain and a plurality of grippers secured to said chain, said gripping means being positioned after a downstream end of the first conveying means, in the feeding direction, for receiving and gripping a leading edge of the web, there being a gap between said first conveying means and said gripping means;

means for displacing said gripping means in the feeding direction;

loop forming means disposed in said gap for movement between a first position above the conveying plane and a second position below the conveying plane for contacting a portion of the severed tube section intermediate the leading and trailing edges, for pulling the tube section from the first conveying means, and for forming a loop in the intermediate portion of the severed tube section;

second conveying means positioned at a level lower than the level of the downstream end of the first conveying means and running transversely to the web feeding direction for contacting a side of the loop formed by said loop forming means facing said second conveying means; and

movable pressure means for pressing the loop against said second conveying means, said movable pressure means being positioned to contact a side of the loop opposite the side facing the second conveying means and being movable to apply the loop to said second conveying means so that the severed tube section is conveyed transversely to the web feeding direction with leading and trailing edges of the section on opposite sides of the loop.



2. An apparatus for severing tube sections from intermittently fed tubular webs and for conveying severed tube sections in loop form with leading and trailing edges of the tube sections positioned on opposite sides of the loop, said apparatus comprising:

first conveying means for intermittently feeding a tubular web in a feeding direction, said first conveying means defining a web conveying plane and having a downstream end positioned at a first level;

severing means interposed in the conveying plane defined by the first conveying means for severing a tube section from the web;

gripping means positioned after a downstream end of the first conveying means, in the feeding direction, for receiving and gripping a leading edge of the web, there being a gap between said first conveying means and said gripping means;

means for displacing said gripping means in the feeding direction;

loop forming means disposed in said gap for movement between a first position above the conveying plane and a second position below the conveying plane for contacting a portion of the severed tube section intermediate the leading and trailing edges, for pulling the tube section from the first conveying means, and for forming a loop in the intermediate portion of the severed tube section, said loop forming means comprising parallel chains spaced from each other by a distance greater than the width of

the web, and a plurality of spaced apart rods secured to said chains, said chains having runs such that said rods pass through said gap to form said loops;

second conveying means positioned at a level lower than the level of the downstream end of the first conveying means and running transversely to the web feeding direction for contacting a side of the loop formed by said loop forming means facing said second conveying means; and

movable pressure means for pressing the loop against said second conveying means, said movable pressure means being positioned to contact a side of the loop opposite the side facing the second conveying means and being movable to apply the loop to said second conveying means so that the severed tube section is conveyed transversely to the web feeding direction with leading and trailing edges of the section on opposite sides of the loop.

3. An apparatus for severing tube sections from intermittently fed tubular webs and for conveying severed tube sections in loop form with leading and trailing edges of the tube sections positioned on opposite sides of the loop, said apparatus comprising:

first conveying means for intermittently feeding a tubular web in a feeding direction, said first conveying means defining a web conveying plane and having a downstream end positioned at a first level, said first conveying means comprising a first driven conveyor, and a clamping roller pair having a driven roller that can be selectively uncoupled from its drive, said clamping roller pair being displaceable to and fro in the feeding direction and being raisable and lowerable as a unit;

severing means interposed in the conveying plane defined by the first conveying means for severing a tube section from the web;

gripping means positioned after a downstream end of the first conveying means, in the feeding direction, for receiving and gripping a leading edge of the web, there being a gap between said first conveying means and said gripping means;

means for displacing said gripping means in the feeding direction;

loop forming means disposed in said gap for movement between a first position above the conveying plane and a second position below the conveying plane for contacting a portion of the severed tube section intermediate the leading and trailing edges, for pulling the tube section from the first conveying means, and for forming a loop in the intermediate portion of the severed tube section;

second conveying means positioned at a level lower than the level of the downstream end of the first conveying means and running transversely to the web feeding direction for contacting a side of the loop formed by said loop forming means facing said second conveying means; and

movable pressure means for pressing the loop against said second conveying means, said movable pressure means being positioned to contact a side of the loop opposite the side facing the second conveying means and being movable to apply the loop to said second conveying means so that the severed tube section is conveyed transversely to the web feeding direction with leading and trailing edges of the section on opposite sides of the loop.

4,316,724

GASOLINE AND ALCOHOL BLENDS

Sheldon Herbstman, Spring Valley, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed May 5, 1980, Ser. No. 146,841
Int. Cl.³ C10L 1/18
U.S. Cl. 44—56 **9 Claims**

1. The method which comprises

(i) mixing gasoline and aqueous ethanol thereby forming a two-phase system including an upper layer containing gasoline and ethanol and a lower layer containing water, ethanol, and gasoline;

(ii) contacting said lower layer with isobutylene or isoamylene olefin in the presence of etherification-alcoholification catalyst at etherification-alcoholification conditions including temperature of 100° F.–300° F. whereby the ethanol in said lower layer reacts with olefin to form ether and the water in said lower layer reacts with olefin to form tertiary alcohol thereby forming a lower layer containing ether and tertiary alcohol;

(iii) mixing said lower layer containing ether and tertiary alcohol with said upper layer containing gasoline and ethanol thereby forming a product gasoline composition containing gasoline, ethanol, ether, and tertiary alcohol; and

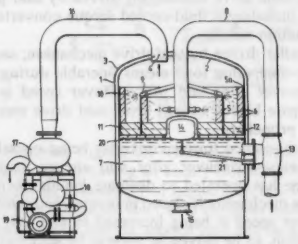
(iv) recovering said product gasoline composition containing gasoline, ethanol, ether, and tertiary alcohol.

4,316,725

METHOD AND APPARATUS FOR DEAERATING LIQUID

Leif Hovind, Oslo, and Tron-Halvard Fladby, Asker, both of Norway, assignors to A/S Akers Mek. Verksted, Oslo, Norway

Filed Oct. 15, 1980, Ser. No. 197,162
Claims priority, application Norway, Oct. 16, 1979, 793332
Int. Cl.³ C02B 1/10
U.S. Cl. 55—41 **11 Claims**



1. A method for deaerating liquids which comprises

(a) directing at least one stream of liquid to be deaerated into a vacuum zone and against the surface of a porous material which is coated on at least one vertically-extending impingement wall, the porous material preventing the foaming of the liquid in the streams,

(b) causing the liquid absorbed in the porous material on each vertically-extending impingement wall to flow downwardly through the porous material and concurrently become deaerated,

(c) causing the deaerated liquid to pass from the bottom of the porous material coated on each vertically-extending impingement wall downwardly into a horizontally-extending porous partition, the partition acting to prevent any liquid from the streams in step (a) from passing directly therebelow,

(d) causing the deaerated liquid to pass downwardly through the horizontally-extending porous partition and flow into a bath of deaerated liquid,

(e) withdrawing deaerated liquid from the bath of deaerated liquid, and

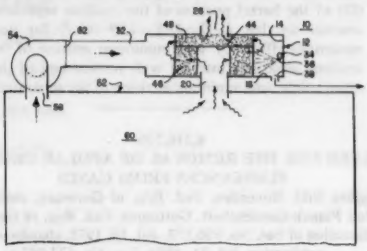
(f) controlling the amount of liquid in the streams of step (a) such that the surface of the bath of deaerated liquid will be located in the horizontally-extending porous partition, thereby preventing the occurrence of foam on the surface of the bath.

4,316,726

METHOD AND APPARATUS FOR PROCESSING FLUIDS

James A. Hopper, Erie, Pa., assignor to American Sterilizer Company, Erie, Pa.

Filed Jul. 7, 1980, Ser. No. 166,755
Int. Cl.³ B01D 53/26
U.S. Cl. 55—89 15 Claims



12. A method for processing liquid-containing fluids present in a work chamber at elevated temperature comprising the steps of:

providing a tortuous path of fluid communication between said work chamber and the outside atmosphere, said tortuous path having disposed therein filter means adapted to permit passage of gases and retard passage of liquids;

permitting said liquid-containing fluids present in said work chamber to flow along said tortuous path in a first direction during periods of a first pressure differential between said work chamber and the atmosphere;

thereafter withdrawing said liquid-containing fluids from said work chamber and forcing them to flow in an annulus surrounding said tortuous path, said annulus being in fluid communication with said tortuous path to permit said withdrawn fluids, after flowing in said annulus, to return to said work chamber;

cooling said withdrawn liquid-containing fluids as they flow in said annulus; and

permitting the flow of atmospheric gas along said tortuous path in a second direction opposite to said first direction when the pressure differential between said work chamber and said atmosphere reverses.

4,316,727

ANNULAR-GAP WASHER INCLUDING ELECTRODE MEANS

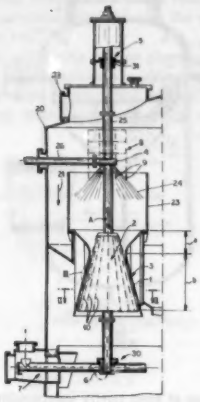
Karl-Rudolf Hegemann, Essen-Bergerhausen; Johannes W. Kautz, Heiligenhaus, and Helmut Weissert, Bochum-Hiltrop, all of Fed. Rep. of Germany, assignors to Gottfried Bischoff Bau Kompl. Gasreinigungs- und Wasserrückkühlanlagen GmbH & Co. KG, Essen, Fed. Rep. of Germany

Filed Oct. 17, 1980, Ser. No. 198,042
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1979, 294213
Int. Cl.³ B03C 3/16
U.S. Cl. 55—107 3 Claims

1. In an annular-gap washer for scrubbing a particle-containing waste gas with a scrubbing liquid and comprising a housing forming a gas passage and having a gas inlet and a gas outlet, an elongated central body disposed in said passage and defining an elongated annular gap with said housing, means for adjustably shifting said body for varying the width of said gap, a spray nozzle disposed axially in said housing between said gas inlet and said body for dispensing a spray of scrubbing liquid into a particle-containing waste gas adapted to flow through said gap, the improvement which comprises:

at least one discharge electrode disposed in said passage prior to said nozzle for electrically charging particles contained in said waste gas, said at least one discharge electrode having a non-discharge terminal portion extending into the region adjacent said nozzle and the region sprayed thereinto;

further electrode means positioned between said housing and said body across said gap and said further electrode means producing an electrostatic field therebetween with



substantially radial field lines for inducing electrodynamic action in a mixture of said gas and droplets of said liquid flowing through said gap; and

a high voltage electric source connected to said at least one discharge electrode and across said further electrode means.

4,316,728

ENTRAINMENT SEPARATOR

Michael B. Caesar, Lake City, Fla., assignor to Occidental Research Corporation, Irvine, Calif.

Continuation-in-part of Ser. No. 909,895, May 26, 1978, abandoned, and Ser. No. 909,898, May 26, 1978, Pat. No. 4,164,398, and a continuation of Ser. No. 44,376, Jun. 1, 1979, abandoned. This application Aug. 8, 1980, Ser. No. 176,377
The portion of the term of this patent subsequent to Aug. 14, 1996, has been disclaimed.
Int. Cl.³ B01D 45/10
U.S. Cl. 55—226 7 Claims

1. A device for separating entrained liquids and solids from a gas comprising:

(a) housing having inlet means for introducing a flow of gas having entrained liquids and solids therein, into said housing, first outlet means for withdrawing liquids and solids, separated from said gas, from said housing, and second outlet means for withdrawing gas, substantially free of entrained liquids and solids, from said housing, said inlet means and said first outlet means being disposed in opposite ends of said housing, said second outlet means being disposed in said housing intermediate said inlet and first outlet means;

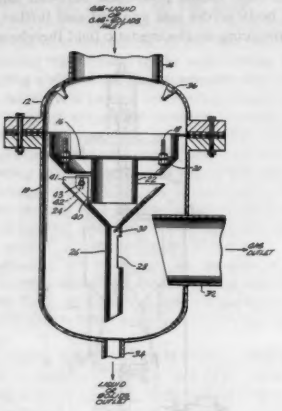
(b) a member having means defining a first surface for intercepting the flow of gas introduced by the inlet means and a second surface opposite said first surface;

(c) a tube disposed within said housing and extending away from the second surface;

(d) annular deflector means disposed adjacent to said member first surface and positioned to provide an opening therebetween, said deflector means being operative for directing the gas flow toward said tube;

(e) means for adjusting the position of the member relative to

the annular deflector means, thereby varying the size of said opening; and



(f) funnel means at least partly surrounding said tube for conducting flow of liquids and solids separated from the gas introduced into the housing into said second outlet means.

4,316,729

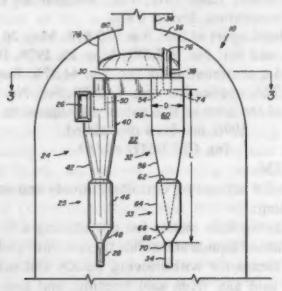
HIGHLY EFFICIENT CYCLONE SEPARATOR

John P. Mac Lean, Stafford; J. Edward Cantwell, Houston; John D. Brown, The Woodlands, and Harold D. Hoy, Bridge City, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 38,756, May 14, 1979, abandoned, which is a continuation-in-part of Ser. No. 865,051, Dec. 27, 1977, abandoned. This application Jul. 7, 1980, Ser. No. 166,638

Int. Cl.³ B04C *5/04*

U.S. Cl. 55—459 R **4 Claims**



1. A cyclone separator (**32**) comprising a barrel portion (**56**) having an inlet means (**54**) and an outlet means (**74**) wherein,

(a) said separator inlet means (**54**) having an inlet area (I) in the upper portion of the separator shaped for receiving gases with entrained solids therein at a velocity in the range of 52 feet per second to 80 feet per second,

(b) said solids-free-gas outlet means (**74**) having an outlet area (O) at the upper portion of the separator shaped for receiving solids-free-gas at a velocity in the range of 52 feet per second to 200 feet per second,

(c) the ratio of said solids-free-gas outlet area (O) to said separator inlet area (I) being in the range of substantially O/I=0.4/1 to 1.0/1.0,

(d) said cyclone separator having a lower conical portion means (**58**) and a dust bowl means (**33**) attached to said lower conical portion means with a solids outlet means (**70**) on the bottom of said dust bowl means, wherein the diameter (**d62**) at the junction of said lower conic portion and said dust bowl means is 0.1 to 0.8 times the diameter (D) of said barrel portion, and

(e) the distance (L) from said gas outlet means (**74**) to said solids outlet means (**70**) being proportional to the diameter (D) of the barrel portion of the cyclone separator in an amount so that $L/D=4.49-1.09$ (O/I) for providing maximum efficiency with minimum erosion of both the cyclone separator internal wall surface and of the separated solids, and minimum attrition of the separated solids.

4,316,730

FILTER FOR THE REMOVAL OF APOLAR ORGANIC SUBSTANCES FROM GASES

Hansjörg Eibl, Bovenden, Fed. Rep. of Germany, assignor to Max Planck-Gesellschaft, Gottingen, Fed. Rep. of Germany

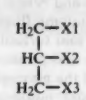
Continuation of Ser. No. 926,173, Jul. 19, 1978, abandoned. This application Jul. 31, 1980, Ser. No. 173,947

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1978, 2818608

Int. Cl.³ B01D *39/14*

U.S. Cl. 55—524 **20 Claims**

1. Filter for the removal of apolar organic substances from gases comprising a filter support and an absorbent comprising at least one compound of the following formula:



I

wherein one of X1, X2, and X3 is a phosphoric acid, phosphoric acid ester, or phosphatidyl moiety and two of the groups X1, X2, and X3 are independently selected from saturated fatty acid ester moieties and saturated alcohol (8 to 20 carbon atoms) ether moieties.

4,316,731

METHOD AND APPARATUS FOR PRODUCING FIBERS

David C. K. Lin, Newark, and Larry J. Huey, Granville, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Sep. 25, 1980, Ser. No. 190,677

Int. Cl.³ C03B *37/06*

U.S. Cl. 65—5 **16 Claims**

1. Apparatus for attenuating streams of molten material into filaments advancing along a path comprising:

a first member having:

(a) a landing,

(b) an arcuate surface having a radius "r_2", the sum of the lengths of the landing and the arcuate surface being equal to the converging section length, l_3,

(c) a front surface opposite said arcuate surface,

(d) a chamber surface, said arcuate surface being located intermediate and contiguous with said landing and said chamber surface,

(e) a nozzle edge at the distal end of said landing, and

(f) a beveled section angled upwardly from said front surface at an angle E; and

a second member having:

(a) a forward wall,

(b) a first arcuate section,

(c) a head section,

(d) a second arcuate section having a radius "r_1", and

(e) a chamber section,

said first arcuate surface being located intermediate and contiguous with said forward wall and said head section, said second arcuate surface being located intermediate and contiguous with said head section and said chamber section, said first

member and said second member being oriented such that (i) said landing and said head sections form an acute angle A therebetween, (ii) said edge being located immediately adjacent said head section to form a nozzle gap d_6 therebetween, and (iii) said chamber section and said head section are oriented at an angle G therebetween where

$$5° \leqq A \leqq 60°$$

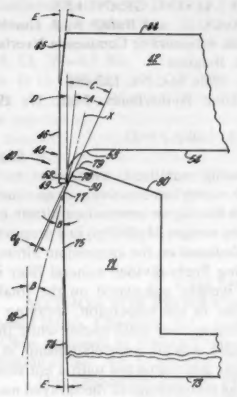
$$0° \leqq E \leqq 20°$$

$$65° \leqq G \leqq 145°$$

wherein the ratio

$$R_1 = r_1/d_6$$

and



$$R_1 \geqq 3$$

wherein the ratio

$$R_2 = r_2/d_6$$

and

$$R_2 > R_1$$

wherein the ratio

$$R_3 = l_3 d_6$$

and

$$10 \leqq R_3 \leqq 2{,}000.$$

4,316,732

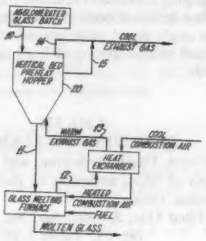
BYPASS WEDGE FOR DRYING AND PREHEATING GLASS BATCH AGGLOMERATES

Mark A. Propster, Gahanna, and Charles M. Hohman, Granville, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jun. 11, 1980, Ser. No. 158,558
Int. Cl.³ C03B *1/00*
U.S. Cl. 65—27 **11 Claims**

1. A process for producing glass by charging to a melting furnace and melting therein a batch including the steps of compacting the batch into agglomerates, forming a vertical bed with the agglomerates, moving the agglomerates in direct contact with and countercurrently to, hot furnace exhaust gases, removing exhaust gases that pass through the top part of the vertical bed and removing a portion of the exhaust gases below the top of the vertical agglomerate bed, wherein a sufficient amount of exhaust gases are removed below the top of the bed so that the exhaust gases passing through the top of the bed have a lowered temperature and a reduced velocity sufficient to reduce particulate emissions in the exhaust gases leaving the top of the bed.

4. An apparatus for producing molten glass comprising:
means for forming glass batch into agglomerates;
a free flowing, shaft-type vertical bed preheat hopper;
means for supplying the agglomerates to the upper portion of the hopper;



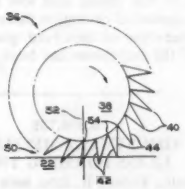
a glass melting furnace;
means for supplying the agglomerates from the lower portion of the hopper to the glass melting furnace;
means for supplying exhaust gases to the lower portion of the preheat hopper;
means for removing the exhaust gases that pass through the top part of the hopper; and
bypass means for removing a portion of the exhaust gases below the top of the hopper,
wherein the bypass means is located above the means for supplying exhaust gases to the hopper so as to heat the agglomerates in the lower portion of the hopper.

4,316,733

APPARATUS AND METHOD FOR ATTENUATING GLASS RIBBON

Robert A. Lawhon, Carlisle, and Jeffrey S. Yigdall, Conneaut Lake, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 25, 1980, Ser. No. 191,041
Int. Cl.³ C03B *18/06*
U.S. Cl. 65—99 A **10 Claims**



1. In an edge roll for rotatably engaging a ribbon of glass to exert attenuating forces to the marginal edge portions thereof, including a body portion supporting a plurality of glass engaging members about its circumferential surface, each of said glass engaging members having glass penetrating end portions, a leading edge and a first intersection point defined by the intersection of the leading edge and the body portion, the improvement comprising:
first selected ones of said glass engaging members fixed and shaped relative to said body portion at least during en-

gagement between each of said glass engaging members and said ribbon of glass such that an axial line which passes through the first intersection point is parallel to the leading edge or passes through the glass engaging member.

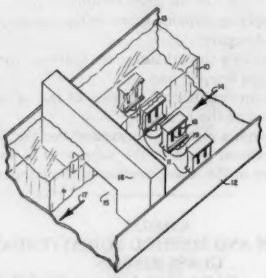
6. In a method of attenuating a ribbon of glass comprising the steps of mounting a plurality of glass engaging members having glass penetrating end portions on the circumferential surface of a body portion of an edge roll, rotating the body portion about an axis of rotation, and engaging a marginal edge portion of the ribbon of glass with said edge roll such that each of said glass engaging members engages said ribbon during a portion of its movement path defined as an engagement path; the improvement comprising:

engaging the ribbon of glass with first selected ones of said glass engaging members such that the leading edge of each of said first selected ones of said glass engaging members forms an angle equal to or greater than 90° with the surface of said ribbon during at least one half of its engagement path.

4,316,734
REMOVING INCLUSIONS

Emilio D. Spinosa, Upper Arlington, and Dale Ensminger, Columbus, both of Ohio, assignors to Battelle Memorial Institute, Columbus, Ohio

Filed Mar. 3, 1980, Ser. No. 126,797
Int. Cl.³ C03B *5/16*
U.S. Cl. 65—135 **9 Claims**



1. A method of removing gaseous inclusions from a highly viscous liquid containing both inclusions and dissolved gases comprising

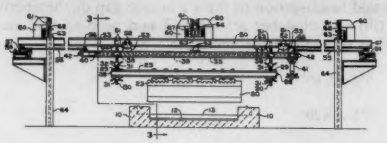
applying sonic energy in the liquid at an energy intensity sufficient to induce migration and coalescence of the inclusions in the liquid, and less than that required to produce substantial cavitation therein, so as to avoid substantial liberation of dissolved gases, until the volume density of the inclusions has been reduced to a desired level.

4,316,735
POSITION ADJUSTMENT MECHANISM FOR FLAT GLASS FORMING TWEEL

Stephen J. Schultz; Ronald R. Zito, both of Pittsburgh; George O. Wehner, Bethel Park, and George C. Newcamp, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 28, 1980, Ser. No. 211,167
Int. Cl.³ C03B *18/06*
U.S. Cl. 65—164 **12 Claims**

1. An apparatus for producing flat glass including a longitudinally spaced melting furnace and forming chamber and a delivery section therebetween providing a path for a flow of molten glass in the longitudinal direction from the melting furnace into the forming chamber, tweel flow control gate means in the delivery section for controlling the flow of molten glass therethrough, elevator means for vertically raising and lowering the tweel, support means above the delivery section



for supporting the elevator means, and means associated with the support means for adjusting the position of the tweel in the longitudinal direction.

4,316,736
PROCESS FOR PREPARING STABILIZED, AMMONIUM NITRATE CONTAINING GRANULES

Willy H. P. Van Hijfte, Assenede, and Rafaël A. J. Goethals, Ertvelde, both of Belgium, assignors to Compagnie Neerlandaise de l'Azote, Brussels, Belgium

Filed Feb. 28, 1980, Ser. No. 125,497
Claims priority, application Netherlands, Mar. 15, 1979, 7902086
Int. Cl.³ E05B *73/02*
U.S. Cl. 71—59 **7 Claims**

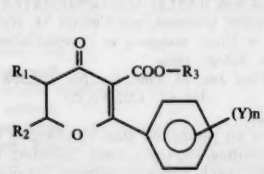
1. A process for preparing stabilized, ammonium nitrate containing granules, which comprises dissolving in an aqueous ammonium nitrate solution having an ammonium nitrate concentration of at least 80% by weight $Mg(NO_3)_2$ in a proportion of 0.5–3.0% by weight, calculated on the ammonium nitrate in the solution, and suspending finely-divided mineral filler in a proportion of 0–45% by weight, calculated on the total of ammonium nitrate and filler in the suspension, spraying the resulting solution of suspension over solid nuclei while these are maintained in essentially spaced interrelationship in an agitated particle bed or mass and contacted with a hot stream of gas, while maintaining the temperature of the sprayed nuclei between 120° and 135° C., to deposit droplets of the sprayed solution or suspension on the nuclei and drying these in situ while evaporated water is removed by the stream of gas, until a desired grain size is reached, whereafter the resulting granules are cooled by means of a cooling medium to a temperature below 50° C. in such a manner that, in the cooling range of from 70° C. to 50° C., the granules remain substantially homogeneous in temperature.

4,316,737
2-PHENYL-5,6-DIHYDRO-4-PYRONE DERIVATIVES AND HERBICIDAL COMPOSITIONS IN WHICH THEY ARE PRESENT

Francois Guigues, Rillieux; Gilles Peris Y Saborit, La Duchere, and Guy Borrod, Villeurbanne, all of France, assignors to Philagro, Lyons, France

Filed Feb. 27, 1979, Ser. No. 15,626
Claims priority, application France, Mar. 15, 1978, 78 08228
Int. Cl.³ A01N *43/16*; C07D *309/28, 311/74, 311/94*
U.S. Cl. 71—88 **16 Claims**

1. A 2-phenyl-5,6-dihydro-4-pyrone derivative of the formula:



in which: R_1 and R_2, which are identical or different, each represent hydrogen or alkyl of 1 to 4 carbons, or together form

an alkylene chain of 2 to 6 carbons, R_3 is alkyl of 1 to 4 carbons, alkenyl of 2 to 4 carbons, alkynyl of 2 to 4 carbons, halogenoalkyl of 1 to 4 carbons or alkoxyalkyl of 3 to 5 carbons, n is 1, 2 or 3, and Y is halogen, alkyl of 1 to 4 carbons or alkoxy or 1 to 4 carbons, at least one Y being alkoxy or halogen with the proviso that when n is different from 1 the substituents Y can be identical or different.

4,316,738
ECONOMICAL PROCESS FOR PRODUCING METAL PARTICLES FOR MAGNETIC RECORDING

Irving W. Wolf, Los Altos; Michael K. Stafford, Santa Clara; Hillard M. Kahan, San Francisco; William F. Acebo, Hayward; Lawrence M. Scott, and Yu C. Lee, both of Newark, all of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Continuation-in-part of Ser. No. 89,783, Oct. 31, 1979, which is a continuation of Ser. No. 8,948, Feb. 2, 1979, abandoned. This application May 23, 1980, Ser. No. 152,899

Int. Cl.³ B22F *9/00*

U.S. Cl. 75—0.5 BA **8 Claims**

1. In the process of reducing an acicular iron oxide to produce acicular metal particles suitable for magnetic recording, the improvement comprising treating the oxide particles with an aqueous solution of sodium tripolyphosphate, drying the thus coated oxide to produce a matrix and reducing the oxide by subjecting the matrix to contact with hydrogen at an elevated temperature in the presence of a dehydrating agent selected from calcium metal, calcium metal with calcium hydride and calcium metal with calcium carbide.

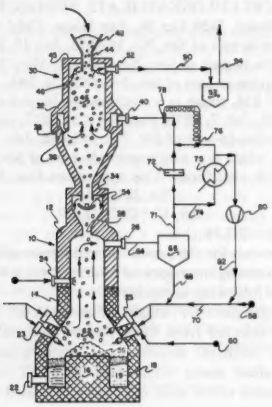
4,316,739
METHOD FOR PRODUCING MOLTEN IRON

Donald Beggs, Charlotte, N.C., and John C. Scarlett, Toledo, Ohio, assignors to Midrex Corporation, Charlotte, N.C.

Division of Ser. No. 57,932, Jul. 16, 1979, Pat. No. 4,235,425. This application Aug. 25, 1980, Ser. No. 181,024

Int. Cl.³ C21B *13/14*

U.S. Cl. 75—40 **5 Claims**



1. A method for reducing particulate iron oxide and producing molten iron comprising:
   (a) reducing particulate iron oxide to solid particulate metallized iron product in a shaft type reduction furnace;
   (b) discharging said reduced metallized particulate product into a gasifier-melter vessel to form a generally central upstanding impact bed hearth of product surrounded by a molten metal pool;
   (c) directing sufficient heat onto said impact bed hearth to melt any metallized product thereon and to form a hot gas, whereby molten iron and slag flow from said hearth to said molten metal pool;
   (d) humidifying the hot gas within said gasifier-melter by introducing water to said vessel above the elevation of said impact bed hearth;
   (e) removing said hot gas from the gasifier-melter, removing particulate matter from said gas;
   (f) introducing at least part of the hot gas into the gasifier-melter as hot blast gas directed toward said impact bed hearth to melt said product; and
   (g) drawing off the molten iron product.

4,316,740
COAL REACTOR CONSERVATION OF BLAST FURNACE COKE

Louis Gold, 2745 29th St., NW., Washington, D.C. 20008

Filed Jun. 6, 1979, Ser. No. 44,554

Int. Cl.³ C21B *5/00*

U.S. Cl. 75—42 **1 Claim**

1. A method of conserving substantial amounts of coke consumed in blast furnace practice by the injection of carbon monoxide from a coal reactor using cheaper grades of coal while lowering the sulfur content of the pig iron comprising the following steps:
   (a) burning a sulfur bearing coal in a coal reactor in the presence of limestone in a substantially closed system consisting essentially of said coal and said limestone and having a reducing atmosphere, thereby preventing the formation of sulfurous oxides and producing a hot fuel gas comprised substantially of nitrogen and carbon monoxide and a slag for removal of sulfur bearing compounds resulting from said burning
   (b) injecting said hot fuel gas into a blast furnace wherein air is replaced by oxygen,

   said overall operation yielding a lower sulfur content pig iron as well as conserving coke.

4,316,741
BLAST FURNACE PROCESS EMPLOYING EXCHANGE FUEL GAS

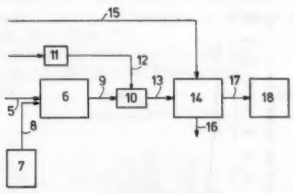
Rolf Wetzel, Heiligenhaus, Fed. Rep. of Germany, assignor to Krupp-Koppers GmbH, Essen, Fed. Rep. of Germany

Filed Apr. 18, 1980, Ser. No. 141,297

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1979, 2916908

Int. Cl.³ C21B *5/00*

U.S. Cl. 75—42 **10 Claims**

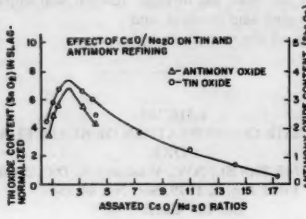


1. A process for producing pig iron in a blast furnace comprising: gasifying fine grained to dusty fuels with oxygen and/or air to provide a high temperature raw fuel gas comprising carbon monoxide and hydrogen; chilling the raw fuel gas with cooler purified coke oven gas to a temperature of from about 750° C. to 1000° C. to provide a gas mixture; hot purifying the gas mixture; and feeding the gas mixture to the blast furnace proper in the area of the blast pipe level or above the blast pipe level at a temperature from about 750° C. to 1000° C.

4,316,742
COPPER REFINING

Everett J. Canning, Jr., Plainsboro, N.J., assignor to Western Electric Co., Incorporated, New York, N.Y.

Filed Oct. 20, 1980, Ser. No. 198,515
Int. Cl.³ C22B *15/00*
U.S. Cl. 75—76 5 Claims

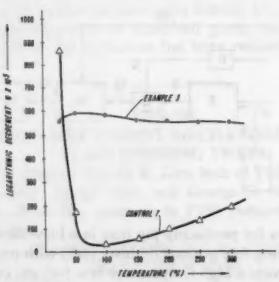

EFFECT OF CaO/Na2O ON TIN AND ANTIMONY REFINING
Δ- ANTIMONY OXIDE
O-TIN OXIDE
TIN OXIDE CONTENT (Sn O2) IN SLAG - NORMALIZED
ANTIMONY OXIDE CONTENT (Sb2 O3) IN SLAG - NORMALIZED
ASSAYED CaO/Na2O RATIOS

1. A method of refining copper comprising the step of treating an oxygenated molten copper bath with a flux which will produce a slag having a slag content comprising calcium oxide and sodium oxide in a weight ratio of CaO/Na_2O of from 1:1 to 4:1 while bubbling oxygen into the copper bath.

4,316,743
HIGH DAMPING FE-CR-AL ALLOY

Mituo Kawai, Yokohama; Takashi Fujita, Ebina; Hideo Shirai; Masatoshi Nakagawa, both of Yokohama, and Hiroshi Abe, Kawasaki, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Division of Ser. No. 834,305, Sep. 19, 1977, abandoned, which is a continuation of Ser. No. 697,991, Jun. 21, 1976, abandoned, which is a continuation of Ser. No. 518,174, Oct. 25, 1974, abandoned. This application Oct. 30, 1979, Ser. No. 89,312
Claims priority, application Japan, Oct. 29, 1973, 48-12017
Int. Cl.³ C22C *37/10*
U.S. Cl. 75—124 19 Claims



1. A metal alloy consisting essentially of from 1 to 8% aluminum, 2 to 30% chromium, and including up to 0.02% carbon, the balance being essentially iron, said alloy having been heat treated at a temperature in the range of from 700° to 1200° C. to provide said alloy with enhanced damping characteristics.

4,316,744
HIGH RATIO SILICATE FOUNDRY SAND BINDERS

Horacio E. Bergna, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 27,024, Apr. 4, 1979, which is a continuation-in-part of Ser. No. 670,076, Mar. 24, 1976, Pat. No. 4,162,238, which is a continuation-in-part of Ser. No. 448,689, Mar. 6, 1974, abandoned, which is a continuation-in-part of Ser. No. 380,124, Jul. 17, 1973, abandoned. This application Oct. 16, 1980, Ser. No. 197,747
Int. Cl.³ B28B *7/34*
U.S. Cl. 106—38.35 9 Claims

1. A stable binder component composition consisting essentially of (a) 95 to 99½% by weight of an aqueous binder comprising an aqueous sodium, potassium or lithium silicate solution or mixtures thereof and amorphous silica, the amorphous silica in the silicate solution determined by the gore test procedure, the binder characterized by (1) a molar ratio of silica to alkali metal oxide of from 3.5:1 to 10:1; (2) a weight fraction of the total silica present as amorphous silica is from 2 to 50%; (3) a weight fraction of the total silica present as silicate ions is from 98 to 50% and the amorphous silica has a particle size of from 2 nanometers to 500 nanometers and (b) ½ to 5% by weight of a suspending agent system comprising (1) carboxymethyl cellulose and (2) carboxyvinyl polymer in a total amount of about 36 to 65% by weight with the relative amount of (1) to (2) ranging from a weight ratio of about 1:4 to 4:1 and (3) magnesium montmorillonite clay in a concentration of about 35 to 64% by weight, said aqueous binder having 15 to 35% by weight silica solids.

4,316,745
PROCESS FOR THE PRODUCTION OF CELLULOSE-SILICATE PRODUCTS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Continuation-in-part of Ser. No. 169,973, Jul. 18, 1980, which is a continuation-in-part of Ser. No. 884,135, Mar. 7, 1978, which is a continuation-in-part of Ser. No. 663,924, Mar. 4, 1976, Pat. No. 4,097,424, which is a continuation-in-part of Ser. No. 559,000, Jul. 7, 1975, Pat. No. 4,072,637, which is a continuation-in-part of Ser. No. 262,485, Jun. 14, 1972, abandoned, which is a continuation-in-part of Ser. No. 71,628, Sep. 11, 1970, abandoned. This application Dec. 30, 1980, Ser. No. 221,432
Int. Cl.³ C07G *1/00*
U.S. Cl. 106—287.34 16 Claims

1. The process for the production of lignin-cellulose silicate product containing impregnated hydrated silica by mixing and reacting the following components:

(a) 1 to 100 parts by weight of an oxidized silicate compound, selected from the group of oxidized alkali metal silicate, oxidized alkaline earth metal silicate, oxidized mono alkali metal silicic acid, oxidized mono alkaline earth metal silicic acid, oxidized silicic acid and mixtures thereof.

(b) 50 parts by weight of plant cellulose particles, selected from the group consisting of cotton, wood cellulose, regenerated cellulose, sulfate cellulose produced by the Craft process, sulfite cellulose, mechanical pulp cellulose, vegetable cellulose, cellulose esters and semichemical cellulose.

(c) A salt-forming compound selected from the group consisting of hydrochloric and sulfuric acid and in an amount wherein the mixture of components (a), (b) and (c) has a pH of 1.5 to 5 after the reaction is complete.

4,316,746

MOLYBDENUM OR TUNGSTEN CONTAINING BISMUTH VANADATE YELLOW PIGMENTS AND PROCESS FOR PREPARING SAME

Massimo Rustioni, Calusco D'Adda, and Luigi Balducci, Mortara, both of Italy, assignors to Montedison S.P.A., Milan, Italy

Filed Feb. 23, 1981, Ser. No. 237,477
Claims priority, application Italy, Feb. 25, 1980, 20146 A/80
Int. Cl.[3] C09C *1/00*
U.S. Cl. 106—288 B 9 Claims

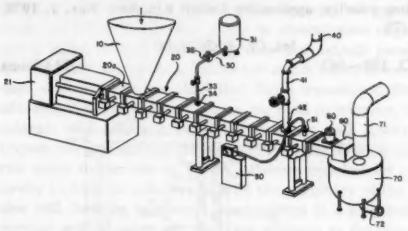
1. An inorganic yellow pigment characterized in that it consists essentially of $Bi_{1-(x/3)}M_xV_{1-x}O_4$ in which M is Mo or W and in which x varies from 0.075 to 0.317 in the case of Mo and from 0.059 to 0.265 in the case of W, and in that it consists essentially of only a tetragonal crystalline scheelite-type phase when M is Mo while, when M is W, also orthorhombic crystalline phase γ Bi_2WO_6 is present besides the said tetragonal crystalline phase.

4,316,747

PROCESS FOR THE CHEMICAL CONVERSION OF CELLULOSE WASTE TO GLUCOSE

Barry A. Rugg, New York, N.Y., and Walter Brenner, Teaneck, N.J., assignors to New York University, New York, N.Y.

Filed Mar. 18, 1980, Ser. No. 131,340
Int. Cl.[3] C13K *1/02;* B01J *3/03*
U.S. Cl. 127—37 6 Claims



1. In a process for the conversion of waste cellulose to glucose of the type wherein an aqueous slurry of waste cellulose is contacted with a dilute sulfuric acid catalyst at elevated temperature and pressure, the improvement wherein the acid hydrolysis comprises the steps of: continuously feeding an aqueous slurry of waste cellulose into an inlet port of a twin screw extruder; continuously reacting the cellulose with water in the presence of the sulfuric acid catalyst at elevated temperature and pressure in a reaction zone disposed in the extruder between the inlet port and an outlet port while continuously conveying same to the outlet port by continuously injecting a dilute sulfuric acid catalyst and a reactant selected from the group consisting essentially of steam and superheated water at elevated pressure into the reaction zone; and at least quasi-continuously discharging the reacted cellulose from the extruder while maintaining the elevated temperature and pressure in the reaction zone by forming a dynamic seal zone at the upstream end of the reaction zone and valving the discharge downstream of the outlet port.

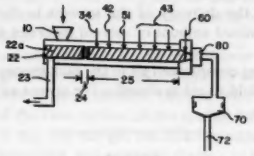
4,316,748

PROCESS FOR THE ACID HYDROLYSIS OF WASTE CELLULOSE TO GLUCOSE

Barry A. Rugg, New York, and Robert Stanton, New Hyde Park, both of N.Y., assignors to New York University, New York, N.Y.

Filed Mar. 18, 1980, Ser. No. 131,339
Int. Cl.[3] C13K *1/06;* B01J *3/03*
U.S. Cl. 127—37 6 Claims

1. In a process for the acid hydrolysis of waste cellulose to glucose of the type wherein waste cellulose is continuously fed into an inlet port of a twin screw extruder, the cellulose is continuously reacted in the presence of a dilute sulfuric acid catalyst at elevated temperature and pressure in the reaction zone by the continuous injection of steam or superheated water at elevated pressure downstream of the inlet port while being continuously conveyed to an outlet port of the extruder while



the extruder temperature and pressure in the reaction zone is maintained by forming a dynamic seal zone at the upstream end of the reaction zone and valving at the downstream end, the improvement wherein the step of forming a dynamic seal zone at the upstream end of the reaction zone comprises providing an unthreaded and radially recessed discontinuity in the screws.

4,316,749

PRODUCTION OF USP QUALITY LACTOSE

John W. Evans, Weed, and Gary C. Young, Visalia, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Oct. 7, 1980, Ser. No. 194,723
Int. Cl.[3] C13K *5/00*
U.S. Cl. 127—55 12 Claims

1. A method of producing USP quality lactose comprising the steps of:

(a) adding to lactose rich permeate derived from passing whey through a semipermeable membrane an effective amount of a food grade chelating agent;

(b) filtering the lactose rich permeate through a simple filtration system at from about 71°–88° C.;

(c) crystallizing the lactose from the permeate at a temperature of from about 10°–24° C.; and

(d) heating the permeate and lactose crystals to from about 32°–44° C.;

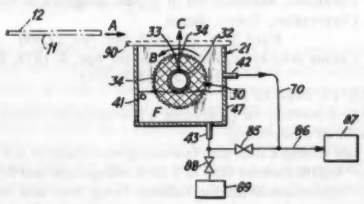
(e) separating, washing and drying the USP quality lactose product.

4,316,750

APPARATUS AND METHOD FOR CLEANING A FLUX STATION OF A SOLDERING SYSTEM

Robert H. Gengler, Aurora, Ill., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Jan. 16, 1981, Ser. No. 225,563
Int. Cl.[3] B08B *7/04;* B05B *15/02*
U.S. Cl. 134—18 10 Claims



7. A method of cleaning a flux spraying station of the type including a tank for holding a bath of flux, a manifold having

a plurality of holes connectable to a supply of compressed air, a squirrel cage screen for rotating a thin film of liquid over the holes, and means for rotating the screen, the method comprising the steps of:

(a) emptying the bath of flux from the tank;

(b) delivering a predetermined amount of a solvent into the tank through the plurality of holes in the manifold;

(c) rotating the squirrel cage screen through the solvent to clean the screen;

(d) stoping the delivery of the solvent to the tank after a predetermined amount of solvent has been delivered; and then

(e) delivering compressed air to the tank through the holes in the manifold to aid in cleaning the screen as it passes over the holes.

4,316,751

ELECTRICAL RESISTANCE COATING FOR STEEL

Thomas J. Prescott, Troy, and Raymond L. Wetzel, Southfield, both of Mich., assignors to Hooker Chemicals & Plastics Corp., Warren, Mich.

Filed Apr. 14, 1980, Ser. No. 139,902

Int. Cl.³ C23F 7/10

U.S. Cl. 148—6.15 Z **12 Claims**

1. The process of providing an insulating coating on a ferrous metal surface comprising:

(a) providing a thin film of an acidic aqueous solution comprising nitrate and phosphate anions on said surface, wherein sadi phosphate and said nitrate respectively comprise at least 30% and 10% of said solution on a dry basis; and

(b) curing said film to a peak metal temperature of from about 200°F. to about 400° F.

4,316,752

OXALIC ACID TREATMENT OF CARBON STEEL, GALVANIZED STEEL AND ALUMINUM SURFACES

Max Kronstein, Bronx, N.Y., assignor to International Lead Zinc Research Organization, Inc., New York, N.Y.

Filed Oct. 16, 1980, Ser. No. 197,577

Int. Cl.³ C23C 7/20, 7/22

U.S. Cl. 148—6.16 **10 Claims**

1. A process for modifying the surface of a metal, characterized by treating the metal surface for from about 0.5 minute to about 10 minutes with a dilute aqueous oxalic acid solution having a temperature in the range of from about 65° C. to about 90° C. and consisting essentially of from about 2% to about 5% by weight oxalic acid and the balance water, the metal being at least one metal selected from the group consisting of carbon steel, galvanized steel and aluminum.

4,316,753

METHOD FOR PRODUCING LOW ALLOY HOT ROLLED STEEL STRIP OR SHEET HAVING HIGH TENSILE STRENGTH, LOW YIELD RATIO AND EXCELLENT TOTAL ELONGATION

Kunishige Kaneko, Tokai; Mamoru Tashiro, Chita; Nagayasu Takemoto, Toyoake; Itaru Imabayashi, Nagoya, and Takashi Furukawa, Machida, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Mar. 21, 1979, Ser. No. 22,500

Claims priority, application Japan, Apr. 5, 1978, 53-39163

Int. Cl.³ C21D 7/14

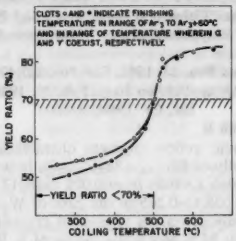
U.S. Cl. 148—12 F **11 Claims**

1. A method for producing a low alloy hot rolled steel strip or sheet comprising:

hot rolling a steel slab consisting essentially of not more than 0.20% carbon, 0.50 to 2.50% manganese and 0.05 to 1.0% chromium with the balance being iron and unavoidable impurities at a finishing temperature not higher than the Ar_3 transformation temperature plus 60° C.,

cooling the hot rolled steel strip or sheet, and

coiling the hot rolled steel strip or sheet at a temperature not higher than 500° C.,



wherein said sheet or strip in the as hot rolled condition has high tensile strength of not less than 40 kg/mm², low yield ratio of less than about 60%, and excellent total elongation of not less than 25%.

4,316,754

HANDLING ROD-LIKE ARTICLES

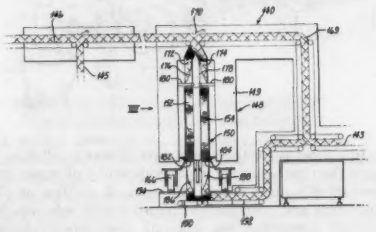
Dennis Hinchcliffe; Frank Heybourn, both of London, and Eric A. Luddington, Ringwood, all of England, assignors to Molins Limited, London, England

Filed Nov. 1, 1979, Ser. No. 90,433

Claims priority, application United Kingdom, Nov. 1, 1978, 42711/78

Int. Cl.³ B65G 1/00

U.S. Cl. 198—347 **23 Claims**

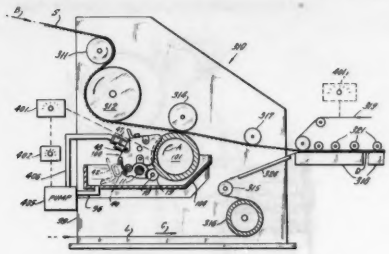


21. A conveyor system for rod-like articles including a delivery station, a receiving station, first conveyor means for moving said articles in continuous stack formation and defining a first path extending from the delivery station to an outlet and a second path extending from an inlet to the receiving station, said outlet and said inlet being horizontally spaced apart, second conveyor means defining an intermediate path for articles between said outlet and said inlet, said second conveyor means comprising movable reservoir means having a plurality of compartments, each compartment having an entrance and an exit for articles, means defining a reservoir path for said reservoir means whereby the reservoir means may be positioned at one end of said reservoir path with an entrance of a compartment in position for transfer of articles from said outlet to said compartment through said entrance and movable to the other end of said reservoir path with an exit of a compartment in position for transfer of articles from said compartment to said inlet through said exit, and means for operating said first and second conveyor means to maintain substantially-continuous streams of articles in stack formation in said first and second paths extending respectively from said delivery station to said outlet and from said inlet to said receiving station and to maintain a relatively-slow moving substantial store of articles in stack formation in said intermediate path.

4,316,755
ADHESIVE METERING DEVICE FOR CORRUGATING PROCESSES

Stephen S. Flaum, Brooklyn, and Martin J. Leff, New York, both of N.Y., assignors to S&S Corrugated Paper Machinery Co., Inc., Brooklyn, N.Y.

Division of Ser. No. 22,141, Mar. 20, 1979, abandoned. This application Nov. 10, 1980, Ser. No. 205,315
Int. Cl.[3] B31F *1/22*
U.S. Cl. 156—205 3 Claims

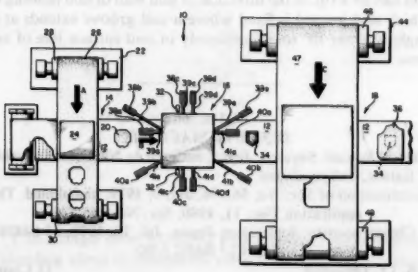


1. A method for manufacturing corrugated board comprising the steps of pumping adhesive into a cavity partially bounded by a rotating adhesive roll, said cavity having a transverse fluid distribution slot along its downstream edge, said cavity being formed in a floating shoe that extends parallel to the rotational axis of the adhesive roll and is biased toward said shoe with a force less than that force transmitted through adhesive in the cavity and urging the fluid distribution slot to enlarge, said adhesive being delivered to said cavity at a known rate and moving through the fluid distribution slot at a rate equal to the rate at which adhesive is delivered to said cavity to form an adhesive film on the periphery of the adhesive roll, forming transverse corrugations in a longitudinally moving web of paper and applying adhesive to the tips of the corrugations by bringing them into contact with said adhesive film, and thereafter applying a liner web to those tips to which said adhesive has been applied.

4,316,756
METHOD FOR BONDING A POCKET BLANK TO A GARMENT PORTION

Robert J. Wilson, Norcross, Ga., assignor to GFF, Inc., Cincinnati, Ohio

Filed Aug. 15, 1980, Ser. No. 178,469
Int. Cl.[3] A41D *27/20*
U.S. Cl. 156—227 14 Claims



1. A method of bonding a pocket blank to a garment portion, said method sequentially comprising the steps of:

providing a pocket blank having front and rear surfaces and comprising a pocket body and laterally extending top, bottom and side margin tabs;

conveying the pocket blank along a path of travel having a longitudinal dimension;

folding over the bottom and side margin tabs of the pocket blank into general proximity with the rear surface of the pocket body;

applying heat and pressure to a strip of heat fusing adhesive to fuse the same to the rear surface of the top margin tab of the pocket blank;

applying heat and pressure to the folded over side and bottom margin tabs of the pocket blank to crease the rear surface thereof into intimate contact with the adjacent portion of the rear surface of the pocket body;

folding over the top margin tab bearing adhesive thereon and applying heat and pressure thereto to bond the rear surface thereof to the rear surface of the adjacent portion of the rear of the pocket body;

applying heat and pressure to fuse strips of heat fusing adhesive to the respective front surfaces of the side and bottom margin tabs of the pocket blank;

providing a piece of garment cloth larger in size than that selected for the garment portion;

overlaying the garment cloth atop the prepared pocket blank to position the prepared pocket blank in the selected disposition thereon;

cutting the garment cloth to the shape selected for the garment portion;

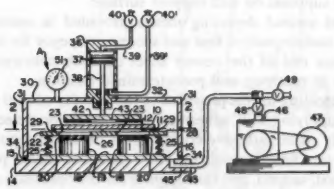
applying heat and pressure to the garment portion and opposite the upwardly disposed adhesive strips on the front surface of the creased side and bottom pocket margin tabs to fuse the prepared pocket blank to the garment portion at the sides and bottom portions thereof to form a pocket thereon; and

conveying the garment portion with pocket fused thereon away for assembly of the garment.

4,316,757
METHOD AND APPARATUS FOR WAX MOUNTING OF THIN WAFERS FOR POLISHING

Robert J. Walsh, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Mar. 3, 1980, Ser. No. 126,807
Int. Cl.[3] B32B *31/22*
U.S. Cl. 156—286 16 Claims

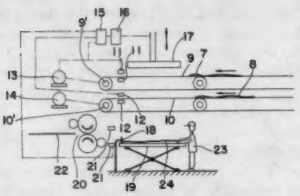


1. A method of wax mounting of thin wafers to a carrier for polishing, inclusive of applying to a flat surface of said carrier a sticky coating of wax followed by heating said carrier, said method characterized by enclosing at least one thin wafer and said wax-coated carrier in a chamber at normal atmospheric pressure while said wax coating is in said sticky condition, evacuating said chamber, bringing said wafer and wax coating into mutual contact, and subsequently returning said chamber to normal atmospheric pressure, whereby said wafer is mounted by said wax coating to said carrier for subsequent polishing substantially without gas bubble entrapment between said wafer and carrier.

4,316,758
APPARATUS OF MANUFACTURING PLYWOOD

Shunichi Suzuki; Yoshinori Koba; Yoshiaki Yamada; Terunki Aoto; Yoriyoshi Kuno, and Masanobu Yokota, all of Ohbu, Japan, assignors to Meinan Machinery Works, Inc., Aichi, Japan

Division of Ser. No. 910,828, May 30, 1978, abandoned. This application Jun. 1, 1979, Ser. No. 44,697
Claims priority, application Japan, Apr. 30, 1976, 51-50359
Int. Cl.[3] B32B *31/00*; G05G *15/00*
U.S. Cl. 156—351 7 Claims



1. An apparatus for manufacturing plywood comprising a horizontal support surface defined at a predetermined position to pile veneer sheets thereon for manufacturing plywood in succession;

means for supplying a veneer sheet coated with adhesive on both surfaces thereof to place on a veneer sheet on said support surface;

first and second conveyor means disposed above said predetermined position in respective upper and lower horizontal planes vertically arranged with each other, and each having a pair of parallel conveyor belts spaced apart from each other in a horizontal plane and conveying a veneer sheet thereon;

pressing means provided above said first conveyor means for pressing the veneer sheet from at least one of said first and second conveyor means vertically between said two pairs of conveyor belts down to the adhesivecoated veneer sheet supplied on said support surface;

first and second detecting means provided in association with said respective first and second conveyor for detecting one end of the veneer sheet on each conveyor belt upon its reaching said predetermined position;

third detecting means provided in the vicinity of said means for supplying said adhesive-coated sheet for detecting a supply of an adhesive-coated sheet on said support surface, said first, second, and third detecting means providing first, second, and third signals for the operation of said pressing means, respectively;

a three input AND circuit provided between said pressing means and said first, second, and third detecting means, said circuit having first, second, and third input terminals for receiving said first, second, and third signals respectively, and adapted to apply an output signal to operate said pressing means;

a false signal circuit branched off from one of said first and second input terminals;

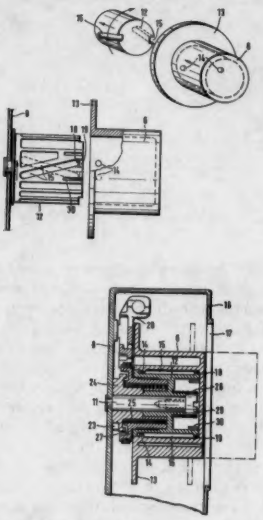
switch means inserted in said false signal circuit; and

actvating means provided in association with said pressing means for bringing said switch means into ON or OFF state.

4,316,759
HAND APPLIANCE FOR ISSUING OR APPLYING SELF-ADHERING LABELS

Werner Becker, Hirschhorn, and Richard Schwobel, Rothenberg, both of Fed. Rep. of Germany, assignors to Esselte Pendaflex Corporation, Garden City, N.Y.

Filed Feb. 22, 1980, Ser. No. 123,579
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1979, 2906856
Int. Cl.[3] B44C *7/00, 7/04*; B65H *49/26, 17/02*
U.S. Cl. 156—387 19 Claims



1. A hand appliance for issuing or applying self-adhering labels which are stuck on a carrier strip, the appliance is equipped with a feeding mechanism which withdraws said carrier strip stepwise for feeding at least one label at a time, said feeding mechanism having a winding core on to which said carrier strip is to be wound and which is rotatable about a journal fixed at one end to a housing wall, the improvement wherein said winding core is held for axial displacement on a boss which drives said winding core and, said winding core through a driver projection which engages in a groove extending obliquely of a surface line of said boss, is so coupled to said boss that said boss shifts said winding core, under the tension of said carrier strip, in the direction of said wall of said housing on which said journal is fixed wherein said groove extends at an angle of from 10° to 30° obliquely of said surface line of said boss.

4,316,760
BINDING MACHINE

Hitoshi Satomi, Sayama, Japan, assignor to Nichiban Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 56,074, Jul. 9, 1979, abandoned. This application Dec. 11, 1980, Ser. No. 215,276
Claims priority, application Japan, Jul. 12, 1978, 53-84835
Int. Cl.[3] B65C *1/00*
U.S. Cl. 156—468 12 Claims

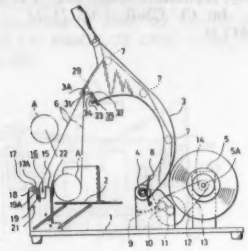
1. A binding machine comprising:

a base provided at its one end with a tape reel for an adhesive tape and at its other end with a tape cramping means for cramping the other end of said adhesive tape, said base

being further provided at its central portion with a table for receiving articles to be bound;

a binding arm pivoted to a point on said base between said cramping means and said tape reel, said binding arm having guide means adapted to guide and introduce said adhesive tape extracted from said tape reel to a tip portion of said binding arm;

a pair of pressing bodies one of which being provided at the inside of said tape cramp means on said base, while the other on the tip portion of said binding arm, said pressing bodies being adapted to abut each other so as to pressbond said adhesive tape wound round articles;



a cutting edge disposed at the outside of said pressing body on said binding arm and adapted for cutting said adhesive tape at the outside of said pressing bodies;

cramp controlling means adapted for releasing said cramping means at the time of cutting of said adhesive tape;

a tape pushing lever disposed at the outside of said cutting edge on said binding arm and adapted for pushing a new tape end into said cramping means; and

a tape rewinding means disposed between a pivot portion of said binding arm and a support shaft of said tape reel and adapted for imparting a rewinding torque to said tape reel when the binding arm is swung down to the side of the base.

4,316,761

SINGLE FACER

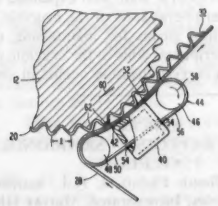
Tadashi Hirakawa; Hiroaki Sasashige, both of Mihara; Hiroyuki Takenaka, and Keiichi Katayama, both of Hiroshima, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Japan

Filed Aug. 15, 1980, Ser. No. 178,459

Claims priority, application Japan, Aug. 17, 1979, 54/113107[U]

Int. Cl.³ B31F *1/00*

U.S. Cl. 156—472 **3 Claims**



1. In a single facer including a corrugating roll having flutes extending along its peripheral surface for forming a corrugating web,

(a) a pressure member opposed to said corrugating roll for pressing a liner web against the corrugated web to form a single-faced board;

(b) said pressure member having an arcuate surface substantially conforming to the contour of an arc extending through the tips of said flutes and having a length in the circumferential direction of said roll which is greater than the distance between two adjacent flutes thereof; and

(c) a movable conveyor interposed between said arcuate surface of said pressure member and the liner web;

(d) said conveyor being movable in the same direction as the periphery of said lower corrugating roll and being movable at a speed equal to the peripheral speed of said lower corrugating roll.

4,316,762

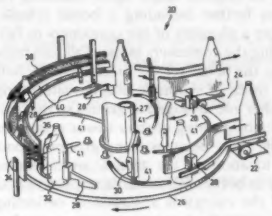
LABEL APPLICATOR

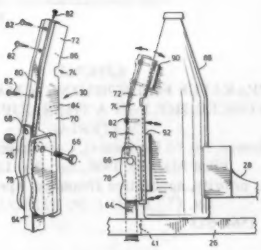
C. Edward Martin, R.R. #2, Shanty Bay, Ontario, Canada

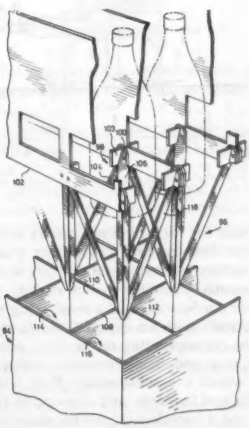
Filed Jul. 19, 1979, Ser. No. 58,897

Int. Cl.³ B65C *3/00*; E06B *17/04*; B65B *1/04*

U.S. Cl. 156—488 **4 Claims**







4. Apparatus for handling containers such as bottles, the apparatus including a labelling station having a plurality of

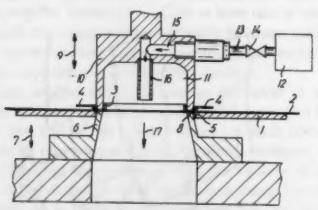
locating arms for use in attaching labels to the containers, a first of the labels being located below a second when placed on respective first and second surfaces of the container, and the arm comprising: a lower portion for use in placing the first of the labels and an upper portion for use in placing the second of the labels, the lower and upper portions have respective leading faces shaped for face-to-face engagement with respective first and second surfaces of the container, the first face normally being displaced slightly from said first surface when the second face and second surface are in face-to-face engagement to thereby ensure engagement of the second face with the container before engagement by the first face, the arm also including an intergral neck portion between the upper and lower portions for flexing to permit engagement of the first face after the said engagement of the second face upon application of force to bring the container and arm towards one another, and being of synthetic plastic material exhibiting sufficient resilience to permit said flexing and to return substantially to its original shape upon removing the force; and the apparatus further including a bottle release mechanism for permitting a plurality of the containers to fall into a crate and for guiding the containers as they fall into respective pockets in the crate, the bottle release mechanism including a plurality of resilient limbs of synthetic plastic material rigidly coupled to one another and arranged in groups so that each group consists of four limbs meeting at their lower extremities and diverging upwardly, there being as many groups as pockets in the crate and the locations of the groups corresponding to the pockets whereby as bottles fall towards respective pockets in the crate some of the energy is absorbed in deflecting the limbs outwardly so that the bottles are guides into the pockets.

4,316,763

APPARATUS FOR FORMING A MARGINALLY REINFORCED HOLE IN A THERMOPLASTIC SHEET MATERIAL

Ole R. Jensen, No. 61 Dortheavej, Copenhagen, Denmark 2400

Filed Mar. 25, 1980, Ser. No. 133,860
Claims priority, application Denmark, Apr. 6, 1979, 1414/79
Int. Cl.³ B26D *5/08;* **B32B** *31/18*
U.S. Cl. 156—513 **1 Claim**



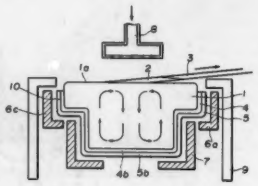
1. Apparatus for forming a marginally reinforced hole in a thermoplastic sheet material comprising a table with a sheet supporting surface and having an aperture with a configuration that is substantially similar to but slightly greater than the radially inner configuration of a reinforcing ring to be used, a tubular electrode with an exposed end face having an inner configuration corresponding to the inner configuration of the reinforcing ring and being movable between an operative position in which it is substantially flush with the sheet supporting surface of the table, and an inoperative position spaced therefrom, and a cup-shaped pressure shoe to properly locate the reinforcing ring opposite to the end face of the tubular electrode, the cavity of said pressure shoe being connectable with a pressurized gaseous fluid source through conduit means including a control member allowing said fluid to enter said cavity when the annular electrode has been brought into its operative position and has caused the temperature of the sheet material to exceed its melting point.

4,316,764

METHOD FOR HORIZONTAL RIBBON CRYSTAL GROWTH

Bosshi Kudo, Nagareyama, and Masamichi Yoshioka, Yoshikawa, both of Japan, assignors to The Agency of Industrial Science and Technology, Tokyo, Japan

Filed Dec. 5, 1979, Ser. No. 100,541
Claims priority, application Japan, Dec. 9, 1978, 53-153005
Int. Cl.³ C30B *15/06, 15/14*
U.S. Cl. 156—617 H **4 Claims**



1. In a method for growing a thin, flat, ribbon-like crystal from a melt of crystalline material, which comprises;

providing a crucible having an open top end defined by a peripheral edge, a closed bottom end, a peripheral wall joining the top and bottom ends and heating means for maintaining a crystalline material charge in a melt form, circulating by convection so as to ascend along the peripheral wall, flow toward the center of the crucible at the top of the melt, descends to the bottom of the crucible beneath the solid-liquid interface described hereinafter and then flows toward the peripheral wall along the bottom of the crucible;

charging the crucible with a melt of the crystalline material, to a level above the peripheral edge;

contacting the upper surface of the melt with a seed crystal, whereby there is formed a solid-liquid interface between the melt and the seed crystal;

cooling the solid-liquid interface beneath the melting point of the crystalline material, whereby crystal grows at the interface;

drawing the growing crystal from the interface continuously, in a substantially horizontal direction; the improvement, which comprises;

in providing the crucible, said crucible also having an expanded upper portion of the peripheral wall including the peripheral edge, projecting outwardly beyond a lower portion of the peripheral wall, said expanded upper portion defining a peripheral zone of the crucible; and

additionally providing means for maintaining the charge melt within the peripheral zone of the crucible in a state of melt whereby no recrystallization occurs in said zone.

4,316,765

DETECTION OF DEFECTS IN SEMICONDUCTOR MATERIALS

Ferdinand A. Thiel, South Plainfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 8, 1980, Ser. No. 213,997
Int. Cl.³ H01L *21/306*
U.S. Cl. 156—626 **9 Claims**

1. A process for fabricating a semiconductor device comprising the steps of treating a body comprising a semiconductor material that is made during a fabrication procedure with an etchant to form etch pits in said body corresponding to defects in said semiconductor material, and if said defects are

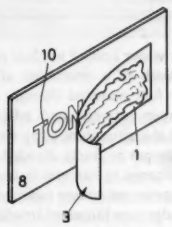
less than an established level fabricating a device by the steps comprising forming an interface between a body comprising a semiconductor material made during said fabricating procedure and an interfacing material characterized in that said etchant is a mixture of water, sulfuric acid and hydrogen peroxide and that said semiconductor material is chosen from the group consisting of indium phosphide and indium arsenide phosphide.

4,316,766

ARTICLE IDENTIFICATION METHOD

Julian Levin, 6 - 5th Ave., Emmarentia Extension, and Arnold Franks, 59 - 6th Ave., Orange Grove, both of Johannesburg, Transvaal Province, South Africa

Filed Mar. 4, 1980, Ser. No. 127,137
Int. Cl.³ B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—631 **9 Claims**



1. A method of defining an identification marking on an article comprising the steps of:

(1) locating on a surface of the article in a required area a flexible plastics foil or film stencil defining a required identification marking in areas where contact occurs between the surface of the article and an active substance wherein the required areas of contact defined by said stencil have a multitude of small perforations formed by electrostatically passing electrons through the stencil material in the required areas thereof;

(2) applying to the stencil to contact the surface through the identification marking defined by the stencil, an active substance which is corrosive to, or a solvent of, the material defining said surface of the article;

(3) allowing such contact between the active substance and surface to persist for a predetermined length of time; and thereafter

(4) removing the stencil and active substance adhered thereto from the article and cleaning the thus marked surface.

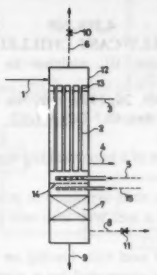
4,316,767

PROCESS FOR CONCENTRATING AQUEOUS UREA SOLUTIONS

Toyoyasu Saida, Fujisawa; Takatatsu Shimokawa, Mobara; Yuzuru Yanagisawa, Mobara; Takashi Nagahama, Mobara, and Koji Ishida, Mobara, all of Japan, assignors to Toyo Enginnering Corporation and Mitsui Toatsu Chemicals Incorporated, both of Tokyo, Japan

Filed Sep. 11, 1980, Ser. No. 186,058
Claims priority, application Japan, Sep. 14, 1979, 54/117370
Int. Cl.³ B01D *1/22*
U.S. Cl. 159—47 UA **4 Claims**

1. In a process for concentrating aqueous urea solutions including a first step of letting an aqueous urea solution flow as a falling film in countercurrent contact with a first stream of hot inert gas to concentrate the aqueous urea solution to a concentration of 95–99% by weight and a second step of passing the aqueous urea solution resulting from the first step through a packed zone in contact with a second stream of hot inert gas to concentrate the aqueous urea solution to a concentration of not less than 99.5% by weight, the first and second steps being conducted at substantially atmospheric pressure, the improvement which comprises, in said second step, passing said second stream of hot inert gas having a temperature of



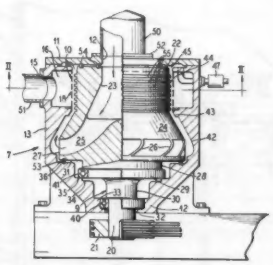
140°–200° C. in an amount of from 200 to 500 m^3/hr, measured at N.T.P., for each ton/hr of the aqueous urea solution fed into said first step, through the packed zone in cocurrent flow with said aqueous urea solution fed into said second step.

4,316,768

PULSE FREE STOCK SCREEN AND COMBINATION PUMP

Denis A. Goddard, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Jul. 18, 1980, Ser. No. 169,950
Int. Cl.³ D21D *5/02*; D21F *1/00*
U.S. Cl. 162—336 **10 Claims**



7. Apparatus for pulse-free separation of pulp particles suspended in a stock slurry flow to a headbox of a papermaking machine comprising:

a hollow housing having an inlet opening connected to a source of stock slurry and an outlet opening leading to said headbox,

a tubular hub portion mounted for rotation in said housing and formed with a central passage for conducting a flow of stock slurry therethrough from said inlet opening,

a pump impeller means connected for rotation with said hub portion in said housing and having pump passage means for drawing said flow from said hub portion and passing said flow to said outlet opening,

a screen extending about said hub portion in fluid communication with said pump passage means on one side and said outlet opening on the the other side for screening relatively large pulp particles,

delivery duct means for directing flow from said pump impeller means to said outlet opening, including a flow space between said screen and said hub portion,

an end cavity in said housing above said outlet opening for

receiving said pulp particles unable to pass through said screen, and

rib surfaces formed on said hub portion for agitating flow in said flow space.

4,316,769

CENTRIFUGALLY CAST CHILLED IRON ROLL

Carl B. Dahl, Rockton, Ill., assignor to Beloit Corporation, Beloit, Wis.

Filed Oct. 26, 1979, Ser. No. 88,342
Int. Cl.³ D21F 3/02
U.S. Cl. 162—360 R 3 Claims

1. In a press section of a papermaking machine, the combination comprising:

a plurality of press rolls arranged in pressing relationship;

means for guiding a wet web into said press rolls for water removal;

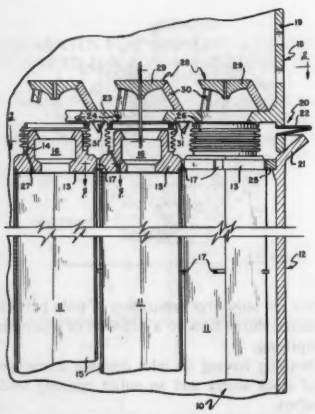
and at least one of said rolls having an outer annular layer surrounding and supported by a core consisting of cast iron, said outer layer formed of an iron having a content of chrome in excess of 15% and no greater than 35% for forming a smooth exterior surface of said roll permitting non-picking separation of said web from said roll with no external lubrication of said surface.

4,316,770

LIQUID-METAL-COOLED REACTOR

Ernest Hutter, Wilmette, Ill., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Sep. 21, 1979, Ser. No. 77,821
Int. Cl.³ G21C 1/02
U.S. Cl. 376—175 4 Claims



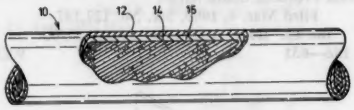
1. In a liquid-metal-cooled fast-breeder nuclear reactor incorporating a core consisting of a plurality of vertically disposed core assemblies enclosed within a hexagonal coolant duct and including an upper adapter, said core being surmounted by an instrument tree, the improvement comprising a perforated depressor plate extending across the bottom of the instrument tree the entire width of the core, the perforations therein being centered on the centerline of the core assemblies and being of a size slightly less than the top of the upper adapter and a circular cylindrical metal bellows attached to each upper adapter matching each perforation in the depressor plate and bearing on the depressor plate to restrict the flow of coolant upwardly between core assemblies, thereby increasing the interassembly coolant and thus decreasing significantly the pressure difference between the inside and outside of the core assembly hexagonal ducts.

4,316,771

NUCLEAR FUEL STRESS CORROSION PREVENTION

Harvey R. Lee, Omemee, Canada, assignor to Canadian General Electric Company Limited, Toronto, Canada

Continuation of Ser. No. 870,076, Jan. 17, 1978, abandoned. This application Sep. 19, 1979, Ser. No. 77,045
Int. Cl.³ G21C 3/20
U.S. Cl. 376—415 12 Claims



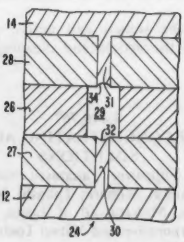
1. A fuel element for water cooled nuclear reactors consisting essentially of a sheath of a zirconium alloy, containing uranium oxide nuclear fuel material therein, and having an intermediate barrier layer between and adjoining both the uranium oxide fuel and the zirconium alloy sheath, said layer including particles of copper in finely divided form of generally less than about 5 microns in size and in amount of at least about 1 milligram of copper per square centimeter whereby in use within a reactor under conditions of irradiation, cadmium released during irradiation from the fuel can combine with the copper to provide a stabilized copper-cadmium compound substantially localized intermediate the fuel and the sheath, thus impeding attack on the sheath by the released cadmium.

4,316,772

COMPOSITE MEMBRANE FOR A MEMBRANE DISTILLATION SYSTEM

Dah Y. Cheng, 12950 Cortez, Los Altos, Calif. 94022, and Steve J. Wiersma, 658 Princeton Dr., Sunnyvale, Calif. 94087

Continuation-in-part of Ser. No. 12,047, Feb. 14, 1979, Pat. No. 4,265,713. This application Feb. 4, 1980, Ser. No. 118,192
Int. Cl.³ B01D 3/02
U.S. Cl. 202—163 15 Claims



1. Thermal membrane distillation apparatus for separating pure water from an aqueous solution comprising:

a composite membrane separating an aqueous solution to be purified from purified water;

said composite membrane comprising a thin porous hydrophobic layer sandwiched between two thin hydrophilic layers; and,

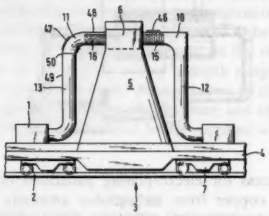
means for providing a sufficient temperature differential across said composite membrane so that liquid water evaporates on the aqueous solution side of the pores of the hydrophobic layer and condenses as pure water on the pure water side of the pores of the hydrophobic layer.

4,316,773

HOOD CAR FOR THE ABSORPTION OF EMISSIONS LIBERATED UPON PUSHING OF COKE OVENS

Wilhelm Stog, In der Baut 9, 4355 Waltrop, Fed. Rep. of Germany

Filed Feb. 8, 1980, Ser. No. 120,104
Claims priority, application Fed. Rep. of Germany, Feb. 10, 1979, 2905109
Int. Cl.³ C10B *33/00, 45/00*
U.S. Cl. 202—263 9 Claims



1. A hood car for withdrawing dust-laden gases from coke during pushing of a coke oven, said car comprising:

a chassis shiftable along a path parallel to a coke oven;

a downwardly open hood mounted on said chassis for collecting dust-laden gas upon the discharge of coke from said coke oven, said hood having an upper end;

a duct connected to said upper end of said hood for drawing dust-laden gas from said hood;

at least one dust-treating unit connected to said duct for treating gas drawn from said hood; and

at least one recuperative heat exchanger in said duct between said hood and said unit, said heat exchanger comprising

at least one flat grate extending transverse to a direction of flow of gas through said duct and composed of flat iron bars disposed in an eggcrate configuration with edges turned into said direction of flow, and

means for mounting said grate in said duct whereby said grate is cooled by air passing through said duct prior to the flow of dust-laden gas from the discharge of the coke oven to subsequently cool said dust-laden gas.

4,316,774

THERMOELECTRIC INTEGRATED MEMBRANE EVAPORATION SYSTEM

Raymond B. Trusch, South Windsor, Conn., assignor to United Technologies Corporation, Hartford, Conn.

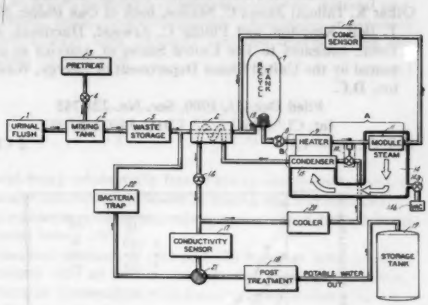
Filed Jul. 5, 1979, Ser. No. 54,749
Int. Cl.³ B01D *3/10*; C02F *1/04*
U.S. Cl. 203—11 7 Claims

6. A process of recovering potable water from urinal waste comprising:

heating the urinal waste to pasteurization temperature by contact with the hot junction surface of at least one thermoelectric heat pump;

passing said heated waste through the interior of at least one hollow fiber membrane and evaporating steam from the exterior of said membrane by subjecting the exterior of the membranes to a vacuum;

followed by condensing said steam by contact with a condensation surface in heat transfer communication with the cold junction surface of the thermoelectric heat pump; the surface area of the hot and cold junction surfaces of the heat pump matched with the interior surface area of the hollow fiber membrane to produce potable water at a total system energy use of less than about ⅓ of the latent heat of



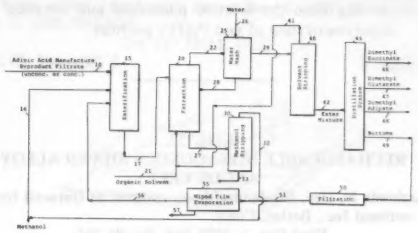
evaporation of the water, operation of the system being gravity insensitive.

4,316,775

TREATMENT OF WASTE STREAM FROM ADIPIC ACID PRODUCTION

William D. Nash, Odessa, Tex., assignor to El Paso Products Company, Odessa, Tex.

Filed Nov. 6, 1980, Ser. No. 204,506
Int. Cl.³ B01D *3/12*
U.S. Cl. 203—43 3 Claims



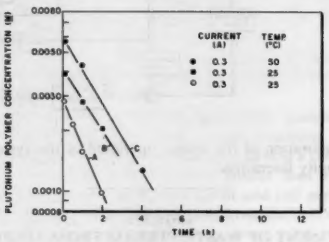
2. In a method for producing dimethyl esters of C_4–C_6 carboxylic acid components contained in an aqueous filtrate, which filtrate is a waste byproduct stream derived from a process for producing adipic acid by nitric acid oxidation of cyclohexanone/cyclohexanol, the improvement which comprises the steps of (1) concentrating the volume of the aqueous filtrate medium by the removal of water and the volatile components which co-distill with water to provide a concentrate solution which has a water content between about 5–30 weight percent and a nitric acid content between about 1–6 weight percent, based on total solution weight; (2) admixing the concentrate solution with between about 20–60 weight percent methanol, based on total solution weight, and heating the solution at a temperature between about 60°–90° C. to form methyl esters of the C_4–C_6 carboxylic acid components; (3) extracting the methyl ester components by contacting the esterification medium with a water-immiscible organic solvent at a temperature between about 40°–90° C.; (4) separating the immiscible organic solvent phase and aqueous phase; (5) concentrating the aqueous phase from step (4) by distillation to provide an aqueous concentrate containing nitric acid and metal catalyst values; (6) fractionally distilling the organic solvent phase from step (4) to yield dimethyl esters of succinic acid, glutaric acid and adipic acid, and a distillation bottoms fraction; (6) subjecting the said bottoms fraction to wiped film evaporation to provide a vapor condensate fraction and a residual heavy end fraction; and (7) recycling the said condensate fraction to the esterification step of the process.

4,316,776

METHOD OF REMOVING PU(IV) POLYMER FROM NUCLEAR FUEL RECLAIMING LIQUID

Othar K. Tallent; James C. Mailen, both of Oak Ridge; Jimmy T. Bell, Kingston, and Phillip C. Arwood, Harriman, all of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 31, 1980, Ser. No. 221,745
Int. Cl.[3] C25C *1/22*; C01G *56/00, 57/00*
U.S. Cl. 204—1.5 2 Claims



1. A method of processing a nuclear fuel reclaiming solution containing water, nitric acid, and Pu(IV) polymer, comprising:

passing electric current through said solution to depolymerize said Pu(IV) polymer, the hydrogen ion concentration of the solution being at least 0.3 molar; and

separating from the solution plutonium ions obtained by depolymerization of said Pu(IV) polymer.

4,316,777

RECHARGEABLE NONAQUEOUS SILVER ALLOY ANODE CELL

Arabinda N. Dey, Needham, Mass., assignor to Duracell International Inc., Bethel, Conn.

Filed Oct. 1, 1979, Ser. No. 81,250
Int. Cl.[3] H01M *10/44*
U.S. Cl. 204—2.1 4 Claims

1. A method for improving the rechargeability of a secondary electrochemical cell comprising the steps of forming a solid solution of an alkali or alkaline earth metal with at least ten percent by weight of silver; and forming a solid anode for the cell from the solid solution, said metal being capable of forming a solid solution with said anode on the recharging of said anode.

4,316,778

METHOD FOR THE MANUFACTURE OF RECORDING SUBSTRATES FOR CAPACITANCE ELECTRONIC DISCS

Marshal L. Whitehurst, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 24, 1980, Ser. No. 190,276
Int. Cl.[3] C25D *1/10, 3/38*
U.S. Cl. 204—5 4 Claims

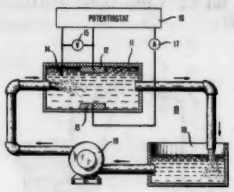
1. In the method for the manufacture of a recording substrate for a capacitance electronic disc in which bright acid copper is electrodeposited from a bath which is comprised of copper sulfate, sulfuric acid, and a brightener the improvement which comprises adding an amphoteric fluorocarbon surfactant to the bath in an amount sufficient to reduce or eliminate occluded hydrogen bubbles in the deposited layer of copper.

4,316,779

PROCESS FOR ELECTROPLATING PALLADIUM ON ARTICLES COMPRISING COPPER

Joseph Yahalom, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 26, 1980, Ser. No. 191,166
Int. Cl.[3] C25D *3/52, 5/34*
U.S. Cl. 204—29 14 Claims



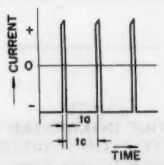
1. A process for electroplating palladium onto a surface comprising copper from an aqueous ammonia plating bath comprising a source of palladium for electroplating, said source of palladium comprising $Pd(NH_3)_4Cl_2$, said process comprising the step of passing current through cathode, plating bath and anode characterized in that the surface is exposed to a solution comprising at least one thiourea compound selected from the group consisting of thiourea and substituted thiourea with at least one substituent on at least one of the nitrogen atoms, said substituent selected from the group consisting of hydrocarbons with up to 10 carbon atoms.

4,316,780

METHOD OF PRODUCING COLOR-ANODIZED ALUMINIUM ARTICLES

Kohichi Y shida, Shimizu; Teruo Miyashita, Fuji, and Hiroshi Sano, Shimizu, all of Japan, assignors to Nippon Light Metal Company Limited, Tokyo, Japan

Filed Sep. 17, 1980, Ser. No. 188,260
Claims priority, application Japan, Sep. 20, 1979, 54-120151
Int. Cl.[3] C25D *11/12, 11/22*
U.S. Cl. 204—35 N 14 Claims



1. In a method of producing colour-anodized aluminium or aluminium alloy articles comprising the steps of: (a) forming an anodic oxide film on the surface of the article by conventional anodizing treatment, (b) subjecting the anodized article to a non-colouring direct current anodic electrolytic treatment to reinforce the barrier layer of the initial anodic oxide film, and (c) subsequently subjecting the resultant article to cathodic electrolytic colouring in an electrolytic bath containing at least one metallic colouring salt, by passing current between the article as cathode and a counter electrode, the improvement wherein said cathodic electrolytic current is a negative voltage direct current having superimposed thereon pulses of a positive voltage, said positive pulses having a duration substantially less than the interval therebetween and being repeated at a frequency sufficient to produce good coloration of said article film.

4,316,781

METHOD FOR ELECTROLYZING ALKALI METAL HALIDE

Toru Seita; Takao Satoh, and Mitsuo Kikuchi, all of Shinnanyo, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shinnanyo, Japan

Filed Sep. 30, 1980, Ser. No. 192,543
Claims priority, application Japan, Oct. 6, 1979, 54/128469
Int. Cl.[3] C25B *1/34, 13/08*
U.S. Cl. 204—98 5 Claims

1. A method for electrolyzing an alkali metal halide wherein the concentration of a cation-exchange group on one side of a fluorocarbon polymer membrane is arranged to be lower than the concentration of the exchange group on the other side of the membrane by 10 to 30% within a depth range from 1 to 100μ; the side having the lower concentration of the exchange group is arranged to face an anode chamber; and electrolysis is carried out with said alkali metal halide supplied to said anode chamber.

4,316,782

ELECTROLYTIC PROCESS FOR THE PRODUCTION OF OZONE

Peter C. Foller, Sunnyvale, and Charles W. Tobias, Orinda, both of Calif., assignors to Regents of the University of California, Berkeley, Calif.

Filed May 29, 1980, Ser. No. 154,584
Int. Cl.[3] C25B *1/00, 1/04*
U.S. Cl. 204—129 12 Claims

1. A method of improving the yield of ozone in relation to the yield of oxygen from the anodic decomposition of water in aqueous electrolytes comprising admixing hexafluoro-anions with the water.

4,316,783

PROCESS FOR MODIFYING A SHAPED POLYETHYLENE

Fumio Hosoi; Takashi Sasaki, both of Takasaki; Miyuki Hagiwara, Maebashi; Noboru Kasai, Takasaki; Kunio Araki, Mito, and Takayuki Hirano, Yokohama, all of Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed Jun. 14, 1979, Ser. No. 48,391
Claims priority, application Japan, Jun. 20, 1978, 53-74562; Jun. 20, 1978, 53-74563
Int. Cl.[3] C08J *3/28, 3/24*
U.S. Cl. 204—159.18 7 Claims

1. In the process for cross-linking a shaped polyethylene by irradiating the polyethylene with electron beams having a maximum range smaller than the thickness of the polyethylene measured in the direction of transmission of electron beam, the improvement whereby Lichtenberg discharge is prevented comprising adding 0.2 to 2 parts by weight of an amine having a basicity of 9.5 pKb or less to 100 parts by weight of polyethylene prior to its irradiation with electron beams.

4,316,784

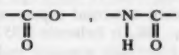
PROCESS FOR ELECTRODEPOSITION OF MICHAEL ADDUCTS OF POLYMERIC MATERIALS

Stephen L. Buchwalter, Allison Park; Joseph F. Bosso, Lower Burrell, and Roger M. Christenson, Gibsonia, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 180,742, Aug. 25, 1980, abandoned, which is a division of Ser. No. 937,386, Aug. 28, 1978, Pat. No. 4,248,753. This application Mar. 26, 1981, Ser. No. 247,582
Int. Cl.[3] C25D *13/06*
U.S. Cl. 204—181 C 13 Claims

1. A method of electrocoating an electrically conductive surface serving as a cathode which comprises passing electric current between said cathode and an anode immersed in an aqueous dispersion of an electrodepositable, heat-curable resinous coating composition which is dispersible in aqueous medium with the aid of cationic salt groups comprising as a resinous binder:

(A) an active hydrogen-containing polymeric material containing alpha, beta-ethylenically unsaturated moieties in conjugation with carbonyl moieties selected from the class consisting of



and being substantially free of epoxy functionality reacted under conditions sufficient to form a Michael adduct with

(B) a primary and/or secondary amine which has a boiling point below 100° C.;

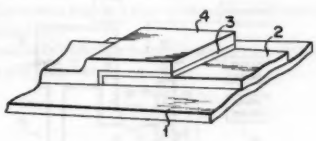
said reaction product of (A) and (B) being at least partially neutralized with an acid to provide said cationic salt groups and being in combination with a curing agent which is reactive with the active hydrogens at elevated temperatures to form a crosslinked product; said coating composition being electrodepositable on a substrate to form a film thereon.

4,316,785

OXIDE SUPERCONDUCTOR JOSEPHSON JUNCTION AND FABRICATION METHOD THEREFOR

Minoru Suzuki; Toshiaki Murakami; Takahiro Inamura; Takashi Inukai, and Youichi Enomoto, all of Mito, Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed Oct. 31, 1980, Ser. No. 202,640
Claims priority, application Japan, Nov. 5, 1979, 54-143126; Feb. 5, 1980, 55-12027
Int. Cl.[3] H01L *39/22*
U.S. Cl. 204—192 S 5 Claims



1. An oxide superconductor Josephson junction comprising a first superconducting electrode layer consisting of $BaPb_{1-x}Bi_xO_3$ (wherein $0.05 \leqq x \leqq 0.3$) which is an oxide with perovskite structure; a barrier layer formed on said first superconducting electrode layer and consisting of one member selected from the group consisting of $BaSnO_3$, $Ba_{1-y}Sr_yPb_{1-x}Bi_xO_3$ (wherein $0 \leqq x \leqq 0.3$, $y > 0.3$), and $BaPb_{1-x}(A_{1-y}Bi_y)_xO_3$ (wherein A is at least one member selected from the group consisting of V, Nb, Ta and Sb; $0.1 \leqq x \leqq 0.3$; and $0 \leqq y \leqq 0.5$), all being oxides with perovskite structures; and a second superconducting electrode layer formed over said first superconducting electrode layer with said barrier layer between and consisting of $BaPb_{1-x}Bi_xO_3$ (wherein $0.05 \leqq x \leqq 0.3$) which is an oxide with perovskite structure.

2. A method of fabricating an oxide superconductor Josephson junction comprising:

the steps of forming a bonding pad by depositing Cr or Au by evaporation on part of a substrate;

the step of forming a first superconducting electrode layer of a thin film of $BaPb_{1-x}Bi_xO_3$ (wherein $0.05 \leqq x \leqq 0.3$) which is an oxide with perovskite structure including the steps of forming by sputtering a thin film of said $BaPb_{1-x}Bi_x)O_3$ on a cooled substrate arranged in opposition to a ceramic target of $BaPb_{1-x}Bi_xO_3$ (wherein $0.05 \leqq x \leqq 0.3$) which is an oxide with perovskite structure and annealing the thin film of $BaPb_{1-x}Bi_xO_3$ formed in said steps to turn it into a superconducting material;

the step of forming a barrier layer on the surface of said first

superconducting electrode layer under the condition that said substrate is cooled, said barrier layer consisting of one member selected from the group consisting of $BaSnO_3$, $Ba_{1-y}Sr_yPb_{1-x}Bi_xO_3$ (wherein $0 \leqq x \leqq 0.3$, $y > 0.3$) and $BaPb_{1-x}(A_{1-y}Bi_y)_xO_3$ (wherein A is at least one member selected from the group consisting of V, Nb, Ta and Sb; and $0 \leqq y \leqq 0.5$), all being oxides with perovskite structures;

the step of forming a second superconducting electrode layer of $BaPb_{1-x}Bi_xO_3$ (wherein $0.05 \leqq x \leqq 0.3$) which is an oxide with perovskite structure including the steps of forming a thin film of said $BaPb_{1-x}Bi_xO_3$ by sputtering on the surface of said barrier layer under the condition that said substrate is cooled and annealing the $BaPb_{1-x}Bi_xO_3$ thin film formed in said steps to turn it into a superconducting material; and

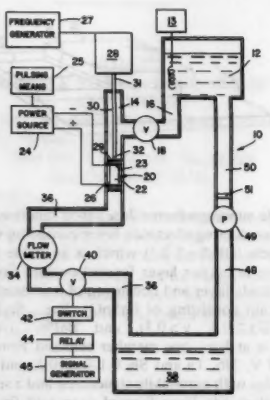
the step of connecting said bonding pad and said second superconducting electrode layer including the step of depositing by lift off evaporation between said bonding pad and said second superconducting electrode layer $BaPb_{1-x}Bi_xO_3$ which is an oxide with perovskite structure and the step of annealing $BaPb_{1-x}Bi_xO_3$ thus deposited for rendering the same superconducting.

4,316,786

APPARATUS FOR ELECTROPLATING PARTICLES OF SMALL DIMENSION

Conrad M. Yu, San Lorenzo, and John D. Illige, Fremont, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 19, 1980, Ser. No. 188,791
Int. Cl.³ C25D *17/16, 21/10, 21/12*
U.S. Cl. 204—223 **22 Claims**



1. In an apparatus (10) electroplating particles of small dimension where the difference between the density of the particles and the plating solution is large or the mass of the particles is very small, the apparatus (10) including a source (12) of plating solution, and a source (24) of electrical power, the improvement comprising:

a cathode cell (20) having a cell chamber (22) for receiving the particles to be plated and the plating solution;

a cathode (23) connected to the power source (24) and comprising a resilient wire screen having a dome-shaped section;

means (27, 28, 29, 30) for vibrating the cathode (23) to maintain the particles to be plated in random free motion and including means positioned adjacent to and adopted for registration with said dome-shaped section of said cathode; and

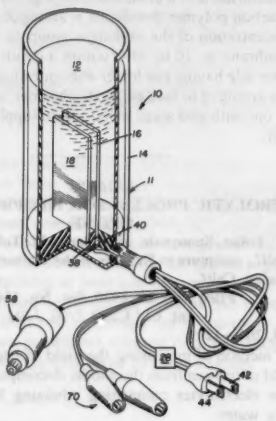
an anode (26) connected to the power source (24) and electrically isolated from the cathode (23) establishing a reducing potential therebetween.

4,316,787

HIGH VOLTAGE ELECTROLYTIC CELL

Constantinos D. Themy, 4984 S. 360 West, Murray, Utah 84106

Continuation of Ser. No. 64,073, Aug. 6, 1979, Pat. No. 4,236,992. This application Jun. 13, 1980, Ser. No. 159,174
Int. Cl.³ C25B *9/00, 11/08, 11/10, 9/04*
U.S. Cl. 204—242 **2 Claims**



1. An apparatus for electrolyzing a chloride ion containing, and other halide ion substantially free, aqueous solution to produce chlorine, comprising:

a vessel;

a cathode in said vessel;

an anode in said vessel, said anode including means for rendering said anode operable at a voltage above about 20 volts and at a watt density above about 100 watts per square inch of surface for over about 2 days without significant deterioration;

a rectifier circuit having a pair of AC inputs, a negative output, and a positive output;

a pair of cell conductors, a first of which connects said negative output to said anode and a second of which connects said positive output to said cathode;

an AC power source supplying a voltage of above about 20 volts; and

a pair of AC conductors directly connecting said AC inputs to receive substantially the full AC voltage from said power source.

4,316,788

ARRANGEMENT FOR COMPENSATING DETRIMENTAL MAGNETIC INFLUENCE BETWEEN TWO OR MORE ROWS OF LONGITUDINALLY ORIENTED ELECTROLYTIC REDUCTION CELLS, FOR ALUMINUM

Thorleif Sele, Snarya, Norway, assignor to Ardal og Sunndal Verk a.s., Oslo, Norway

Filed Jul. 23, 1980, Ser. No. 171,539
Claims priority, application Norway, Jul. 24, 1979, 792441
Int. Cl.³ C25C *3/16*
U.S. Cl. 204—243 M **7 Claims**

1. An arrangement for compensating, in longitudinally oriented pots of one row of pots of a plant for producing metal such as aluminum by electrolytic reduction of a molten bath, a detrimental vertical magnetic field from current in one or more

adjacent rows of longitudinally oriented pots, said arrangement comprising:

first and second substantially symmetrical groups of cathode taps located at opposite sides of the positive end of a pot; and

first and second compensation bus bars, connected to said first and second groups of cathode taps, respectively, said first and second compensation bus bars being located in relation to the pot so as to form a current loop around the cathode of the pot in a clockwise direction or in a counterclockwise direction, depending on whether the detrimental vertical magnetic field to be compensated is positive or negative.

4,316,789
CATION EXCHANGE MEMBRANES

Tokuzo Iijima, Kobe; Yasushi Samejima, Kakogawa; Kazuo Kishimoto, Takasago; Takamichi Komabashiri, Takasago, and Toshiji Kano, Kobe, all of Japan, assignors to Kanegafuchi Chemical Industry Company Limited, Osaka, Japan

Filed May 16, 1980, Ser. No. 150,497

Claims priority, application Japan, May 16, 1979, 54-60883

Int. Cl.³ C25B *13/02, 13/08*

U.S. Cl. 204—296 **4 Claims**

1. A cylindrical cation exchange membrane, by which a finger type electrolytic cell is separated into an anode compartment providing anodes and a cathode compartment providing cathodes, said membrane comprising:

first portions facing effective electrolytic surface of said cathodes and anodes having an equivalent weight of from 1,000 g/eq to 1,800 g/eq; and

second portions facing ineffective electrolytic surface of said anodes and cathodes having an equivalent weight of 2,000 g/eq or more.

4,316,790
CATION EXCHANGE MEMBRANES

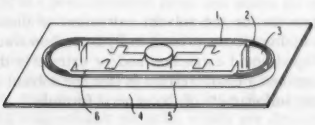
Tokuzo Iijima, Kobe; Yasushi Samejima, Kakogawa; Kazuo Kishimoto; Takamichi Komabashiri, both of Takasago, and Toshiji Kano, Kobe, all of Japan, assignors to Kanegafuchi Chemical Industry Company Limited, Osaka, Japan

Filed May 16, 1980, Ser. No. 150,499

Claims priority, application Japan, May 16, 1979, 54-60884

Int. Cl.³ C25B *13/02, 13/08*

U.S. Cl. 204—296 **11 Claims**



1. A cylindrical cation exchange membrane, by which a finger type electrolytic cell is separated into an anode compartment providing anodes and a cathode compartment providing cathodes, said membrane comprising:

first portions facing effective electrolytic surface of said anodes and cathodes and

second portions facing ineffective electrolytic surface of said anodes and cathodes, wherein said second portions have a higher stiffness and a lower anion permeability than the first portions.

4,316,791
DEVICE FOR CHEMICAL DRY ETCHING OF INTEGRATED CIRCUITS

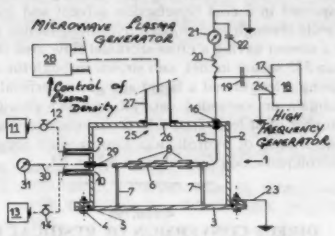
Joseph Taillet, Boulogne, France, assignor to Office Nationale d'Etudes et de Recherches Aerospatiales, Chatillon, France

Filed Aug. 20, 1980, Ser. No. 179,788

Claims priority, application France, Aug. 22, 1979, 79 21128

Int. Cl.³ C23C *15/00;* **C23F** *1/00*

U.S. Cl. 204—298 **4 Claims**



1. An apparatus for etching integrated circuits comprising:

a generator of a plasma of a gaseous component under low pressure;

means for controlling the electron density of the plasma formed by said plasma generator;

a leak tight chamber having a metallic wall and an inner metallic electrode plate for supporting integrated circuits to be etched, said plate being insulated from said wall;

a high frequency alternating signal generator;

means for applying said high frequency alternating signal between said electrode and said wall;

means for measuring the value of the current of said alternating signal; and

communication means between the plasma generator and the leak tight chamber.

4,316,792
HYDROLIQUEFACTION OF COAL

Morgan C. Sze, Upper Montclair, and Harvey D. Schindler, Fairlawn, both of N.J., assignors to The Lummus Company, Bloomfield, N.J.

Filed Dec. 21, 1979, Ser. No. 106,275

Int. Cl.³ C10G *1/06;* **C10B** *57/02;* **C10G** *51/06;* **B01J** *8/18*

U.S. Cl. 208—10 **21 Claims**

1. A process for the catalytic hydroliquefaction of coal, comprising:

catalytically hydroliquefying the coal by passing the coal dispersed in a coal liquefaction solvent and hydrogen upwardly through at least one reactor having at least two parallel expanded hydroliquefaction catalyst beds, said passing being in separate streams through each bed, each stream through each bed having a cross-sectional flow area of no greater than 255 square inches, each of said streams through each catalyst bed having a length and a liquid and gas superficial velocity to maintain an expanded catalyst bed and provide a Peclet Number of at least 3, said hydroliquefaction being effected with a ratio of hydroliquefaction product recycle to total hydroliquefaction feed to the at least one reactor of from 0:1 to 2:1.

4,316,793
HYDROLIQUEFACTION OF COAL

Morgan C. Sze, Upper Montclair, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Filed Dec. 21, 1979, Ser. No. 106,273
Int. Cl.³ C10G *1/06;* B01J *8/18*
U.S. Cl. 208—10 **16 Claims**

1. A process for the catalytic hydroliquefaction of coal, comprising:

catalytically hydroliquefying the coal by passing the coal dispersed in a coal liquefaction solvent and hydrogen upwardly through an expanded hydroliquefaction catalyst bed in a stream having a cross-sectional flow area of no greater than 255 square inches, said stream through the catalyst bed having a length and a liquid and gas superficial velocity to maintain an expanded catalyst bed and provide a Peclet Number of at least 3, said hydroliquefaction being effected with a ratio of hydroliquefaction product recycle to total hydroliquefaction feed of from 0:1 to 2:1.

4,316,794
DIRECT CONVERSION OF RESIDUAL OILS

Hans J. Schoennagel, Lawrenceville, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 6, 1980, Ser. No. 127,612
Int. Cl.³ C10G *11/18, 47/28*
U.S. Cl. 208—111 **16 Claims**

1. A process for converting residual oils to lower boiling components which comprises:

(a) combining petroleum residual oil and hydrogen containing gas with hot solid catalyst particles at a temperature of between about 1000° F. and 1800° F., the ratio of catalyst to oil being within the range of between about 2 and 15, with hydrogen pressure being maintained within the range of between about 100 psig and 1000 psig, to form a suspension;

(b) passing the suspension through a reactor arrangement providing an oil residence time of between about 1 second and 30 seconds;

(c) separating and recovering said lower boiling components and said solid catalyst particles;

(d) gasifying and regenerating the separated solid catalyst particles with a mixture of oxygen-containing gas and steam in a fluidized bed operating in a partial oxidation mode to produce synthesis gas and regenerated catalyst;

(e) recovering said synthesis gas;

(f) directly returning the regenerated catalyst to combine with the residual oil and hydrogen in said reactor arrangement.

4,316,795
HYDROCARBON CONVERSION PROCESS WITH REDUCED SULFUR OXIDE EMISSIONS

John Mooi, Homewood, Ill., assignor to Atlantic Richfield Company, Philadelphia, Pa.

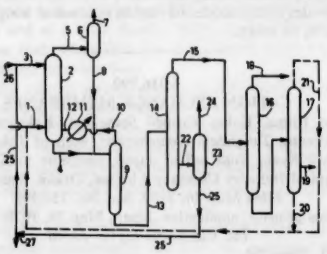
Division of Ser. No. 889,690, Mar. 24, 1978, Pat. No. 4,252,686, which is a continuation-in-part of Ser. No. 681,657, Apr. 29, 1976, Pat. No. 4,252,632. This application Aug. 29, 1980, Ser. No. 182,270
Int. Cl.³ C10G *11/05*
U.S. Cl. 208—120 **22 Claims**

1. In a hydrocarbon conversion process for converting a sulfur-containing hydrocarbon feedstock which comprises (1) contacting said feedstock with solid particles capable of promoting the conversion of said feedstock at hydrocarbon conversion conditions in at least one reaction zone to produce at least one hydrocarbon product and to cause deactivating sulfur-containing carbonaceous material to be formed on said solid particles thereby forming deposit-containing particles, said solid particles being substantially free of platinum group metal components; (2) contacting said deposit-containing particles with an oxygen-containing vaporous medium at conditions to combust at least a portion of said carbonaceous deposit material in at least one regeneration zone to thereby regenerate at least a portion of the hydrocarbon conversion catalytic activity of said solid particles and to form a regeneration zone flue gas containing at least one sulfur-containing carbonaceous deposit material combustion product; and (3) repeating steps (1) and (2) periodically, the improvement which comprises: reducing the amount of sulfur in said regeneration zone flue gas using, in intimate admixture with said solid particles, a minor amount of discrete entities each of which comprises a major amount by weight of at least one separate alumina phase capable of associating with sulfur trioxide at the conditions of step (2) and capable of disassociating with sulfur trioxide at the conditions of step (1), a minor, catalytically effective amount of at least one platinum group metal component deposited on said alumina phase, said platinum group metal component being capable of promoting the conversion of sulfur dioxide to sulfur trioxide at the conditions of step (2), and a minor, catalytically effective amount of at least one crystalline aluninosilicate capable of promoting said hydrocarbon conversion, thereby associating at least a portion of said sulfur-containing combustion product with said discrete entities in said regeneration zone and disassociating at least a portion of said sulfur-containing combustion product from said discrete entities in said reaction zone to form H_2S which exits said reaction zone with said hydrocarbon product.

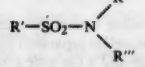
4,316,796
PROCESS FOR THE SEPARATION OF DIENIC AND/OR AROMATIC HYDROCARBONS PRESENT IN HYDROCARBON FRACTIONS

Martial Atlani, Paris; Roben Loutaty, Le Havre; Claude Wakselman, Villebon sur Yvette, and Charles Yacono, Le Havre, all of France, assignors to Compagnie Francaise de Raffinage and Agence Nationale de Valorisation de la Recherche (ANVAR), both of, France

Filed Sep. 12, 1980, Ser. No. 186,483
Claims priority, application France, Sep. 14, 1979, 79 23041
Int. Cl.³ C10G *7/08, 21/20, 21/22*
U.S. Cl. 208—313 **2 Claims**



1. A process for the solvent extraction of dienic and/or aromatic hydrocarbons present in hydrocarbon fractions employing liquid-liquid extraction and/or extractive distillation, said process being characterized in that the solvent comprises at least one sulfonamide of the general formula



wherein R′, R″ and R‴ can be linear or branched, saturated or unsaturated, aliphatic groups possessing from 1 to 18 carbon atoms, wherein two or three of groups R′, R″ and R‴ can be identical, wherein one of the groups R″ or R‴ can be replaced with a hydrogen atom, and wherein at least one of groups R′, R″ and R‴ is unsaturated.

4,316,797
FLOTATION AGENT AND PROCESS

Robert M. Parlman, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 10, 1980, Ser. No. 185,711
Int. Cl.[3] B03D 1/02
U.S. Cl. 209—166 8 Claims

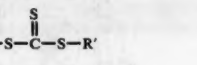
1. In a froth flotation process wherein a pulp of ore and water is aerated to generate a minerals containing froth and wherein said minerals are recovered from said froth,

the improvement comprising

incorporating into said pulp prior to said aeration a flotation agent comprising

An aromatic oil having a specific gravity in the range of about 0.75 to 1.10 and a boiling point in the range of about 150° C. to 500° C. and an aromatic content of about 50 weight percent or more and

(b) a dihydrocarbyl trithiocarbonate having the formula

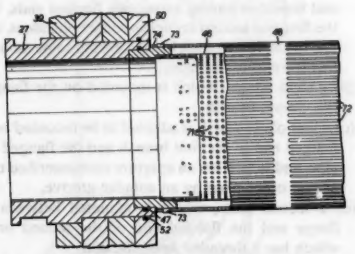


wherein R is allyl and R′ is n-butyl.

4,316,798
SEPARATING CHAMBER FOR A MAGNETIC SEPARATOR

Walter B. Jepson; Peter W. Riley, and David Hocking, all of St. Austell, England, assignors to English Clays Lovering Pochin & Company Ltd., St. Austell, England

Continuation-in-part of Ser. No. 14,221, Feb. 22, 1979, abandoned. This application Aug. 7, 1980, Ser. No. 176,015
Claims priority, application United Kingdom, Feb. 27, 1978, 7779/78
Int. Cl.[3] B03C 1/02; B01D 35/06
U.S. Cl. 209—223 R 16 Claims



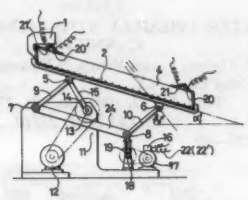
1. In a magnetic separator which comprises a separating chamber, magnetic field producing means for establishing a magnetic field in a predetermined zone, and means for moving the separating chamber between the predetermined zone and a zone remote from the predetermined zone, the improvement which comprises:

a separating chamber comprising (i) a canister having at least one inlet and at least one outlet for a fluid suspension including magnetisable particles which are desired to be separated; (ii) a fluid-permeable magnetisable packing material for capturing said magnetisable particles, being disposed within the canister so that said fluid suspension supplied to the inlet(s) passes through the packing material and exits through the outlet(s); (iii) a first, fluid-permeable, double-walled partition through which said fluid suspension from the inlet(s) must pass to reach the packing material, the two walls of the partition being spaced slightly apart and being apertured, with the apertures in one wall being offset from the apertures in the other wall, to cause the fluid suspension to follow a tortuous path as it passes through the double-walled partition and into the packing material; and (iv) a second, fluid-permeable partition through which fluid suspension from the inlet(s) which has passed through the packing material must pass to reach the outlet(s), the said packing material occupying the volume between said double-walled partition and the second fluid-permeable partition, wherein the distance between the first, fluid-permeable, double-walled partition and the second, fluid-permeable partition is at least six times the distance between the two walls of the first, fluid-permeable, double-walled partition, and the walls of the double-walled partition are spaced apart by a distance in the range of from 2 to 10 millimeters.

4,316,799
AUTOMATIC CONTROL APPARATUS FOR AN OSCILLATING GRAIN SEPARATOR

Toshihiko Satake, Higashihiroshima, Japan, assignor to Satake Engineering Company, Ltd., Tokyo, Japan

PCT No. PCT/JP79/00087, § 371 Date Mar. 28, 1980, § 102(e) Date Feb. 1, 1980, PCT Pub. No. WO80/00316, PCT Pub. Date Mar. 6, 1980.
PCT Filed Apr. 5, 1979, Ser. No. 191,214
Claims priority, application Japan, Jul. 28, 1978, 53-92770
Int. Cl.[3] B07B 13/18
U.S. Cl. 209—504 5 Claims



5. An automatic control apparatus for an oscillating grain separator of a type comprising a grain separating frame having a sidewall, a separating plate having a roughened upper surface within said frame, means for positioning said plate and frame to provide an inclined surface for downward flow of grain, motor means for vertically reciprocating a lower end of said frame and simultaneously reciprocating an angle of inclination of said frame relative to a horizontal plane, said control apparatus comprising a stationary light source and a stationary light receiving element mounted in a position on said frame to check flow conditions of grain on the separating plate and located near at least one wall of the grain separating plate frame and circuit means responsive to said light receiving element for controlling said motor means to provide substantial grain separation on said separator plate.

4,316,800
RECOVERY OF URANIUM FROM ENRICHED SOLUTION BY A MEMBRANE SEPARATION PROCESS

Regis R. Stana, Lakeland, Fla., and Erich W. Tiepel, Littleton, Colo., assignors to Uranerz U.S.A. Inc, Wheat Ridge; Wyoming Mineral Corp., Lakewood, both of, Colo. and Minatome Corp., New York, N.Y.

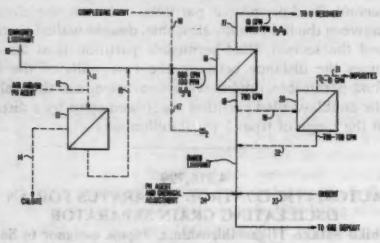
Filed Feb. 21, 1979, Ser. No. 13,702
Int. Cl.[3] B01D 13/00; C01G 56/00; E21B 43/00
U.S. Cl. 210—651 8 Claims

1. A method for concentrating uranium material from uranium enriched solution mining lixiviant containing uranium and calcium, comprising the steps of:

(A) first, contacting the enriched lixiviant with a substance effective to raise the pH of the lixiviant, resulting in precipitation of calcium, which is then removed from the lixiviant, and then

(B) having the pH adjusted, enriched lixiviant contact a separation system, containing at least one semipermeable,

ultrafiltration membrane having the characteristic of NaCl rejection, at 300 psi. and 2,000 ppm. salt concentration, of about 5% to about 20% and capable of concentrating uranium, to concentrate uranium and pass a substantial portion of the lixiviant, to provide a uranium concentrate stream and a uranium barren stream containing low molecular weight cations, anions, and impurities.

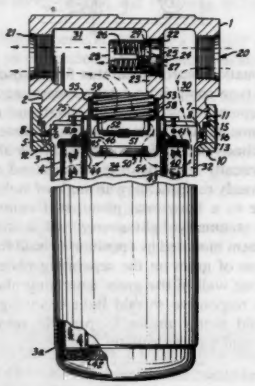


4,316,801

FILTER ASSEMBLY WITH JACKED FILTER CANNISTER

Roydon B. Cooper, Locust Valley, N.Y., assignor to Pall Corporation, Glen Cove, N.Y.

Filed Jul. 22, 1980, Ser. No. 171,070
Int. Cl.³ B01D *27/10*
U.S. Cl. 210—90 **8 Claims**



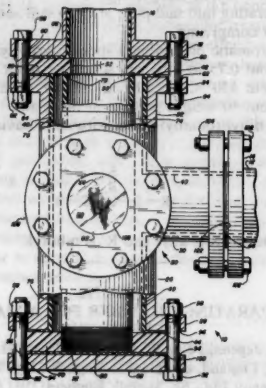
1. A filter assembly having a filter bowl assembly attached to a filter head in a manner that allows jacking of a filter cannister into and away from sealing engagement with the head, comprising, in combination, a filter head; an inlet for unfiltered fluid and an outlet for filtered fluid in the head; and a filter bowl assembly comprising a filter cannister; a filter element removably disposed in the filter cannister across the line of fluid flow from the inlet to the outlet so that fluid flow from the inlet to the outlet normally proceeds through the filter; a jack ring removably attached to the head; and means attaching the filter cannister to the jack ring in a manner to jack the cannister onto the head into sealing engagement therewith when the jack ring is attached to the head, and off from the head when the jack ring is removed from the head, so that the cannister is jacked onto the head and off from the head by the jack ring for access to and replacement of the filter element in the cannister.

4,316,802

FILTER

Michael E. Howell, Davis Junction, Ill., assignor to Illinois Water Treatment Company, Rockford, Ill.

Filed Oct. 30, 1980, Ser. No. 202,268
Int. Cl.³ B01D *35/02*
U.S. Cl. 210—95 **10 Claims**



1. To be used with a pipe having a flanged end, a filter comprising:

(a) a hollow body, which includes first, second, and third tubular branches having coplanar axes, the first and second branches having respective flanged ends, the axes of the first and second branches being coincident, the flanged end of the first branch being adapted to be mounted to the flanged end of the pipe,

(b) a blind flange, which is mounted on the flanged end of the second branch,

(c) a first plate, which is adapted to be mounted between the flanged end of the first branch and the flanged end of the pipe, and which has an aperture circumscribed on one face of said other plate by an annular groove,

(d) a second plate, which is mounted between the blind flange and the flanged end of the second branch, and which has a threaded aperture, and

(e) a tubular filtering element, which is fitted through the first and second branches so as to leave an annular space around the filtering element, which has a first end received by the annular groove of the first plate and a second end threaded into the threaded aperture of the second plate, and which thus is retained by the blind flange,

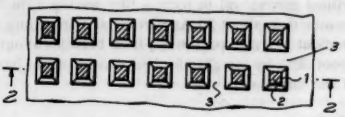
where the threaded aperture compensates for dimensional tolerances, so as to enable a particle-tight seal to be effected between the first end of the filtering element and the annular groove, whereby, when the flanged end of the first branch is mounted to the flanged end of the pipe, an effluent entering the filter through the third branch passes into the filtering element from the outside perimeter of the filtering element and from the first end of the filtering element into the pipe, and whereby particles removed from the effluent by the filter accumulate in the annular space around the filtering element, between the plates, and whereby the blind flange, the second plate, and the filtering element can be removed from the filter at the flanged end of the second branch while the flanged end of the pipe and the first plate remain mounted to the flanged end of the first branch.

4,316,803

FILTER SUPPORT OF PLATES FOR FILTER PRESSES

Lubomir Kupf, Prague; Radomil Adamek, Pardubice, and Mirko Mursec, Pardubice, all of Czechoslovakia, assignors to Statni vyzkumny ustav materialu, Prague, Czechoslovakia

Filed Apr. 23, 1980, Ser. No. 143,011
Int. Cl.³ B01D 25/04
U.S. Cl. 210—455 4 Claims



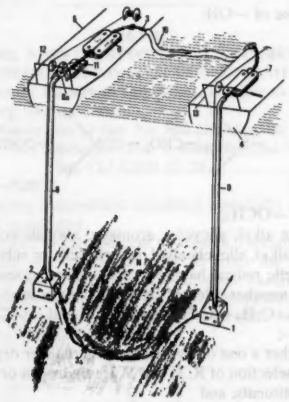
1. A filter support for a plate for filter presses and filters for filtering over a filter wall the plate provided with regularly oriented projections of geometric shape, the upper surfaces of said projections, which are in contact with the filter wall, being provided with grooves.

4,316,804

METHOD AND SYSTEM FOR THE CONTINUOUS CLEANING OF UNDERWATER BEDS

Christian Bocard, Orgeval; Jacques Delacour, Paris, and Philippe Renault, Noisy le Roi, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Jun. 27, 1980, Ser. No. 163,894
Claims priority, application France, Jun. 29, 1979, 79 16893
Int. Cl.³ B01D 35/00
U.S. Cl. 210—671 15 Claims



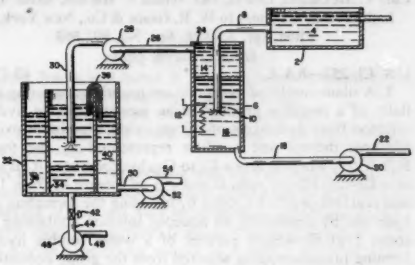
1. A method of continuously hoisting up heavy viscous products from the water bottom to the surface, comprising circulating through the water from the surface a flexible line having collecting means for collecting said products by having the products superficially retained thereon, passing said line through a path having a downward portion bringing said collecting means into contact with the products on the water bottom, and a rising portion of the path for hoisting the products up to the water surface, wherein along said rising portion of the path the collecting means is passed through a tubular casing for protecting the surrounding water above the bottom against pollution by preventing said products from being disengaged from the flexible line, while hoisting the products to the surface.

4,316,805

OIL SEPARATION AND RECOVERY PROCESS AND APPARATUS

Elbert R. Faust, Litchfield, Conn., and Stuart F. Faunce, Fanwood, N.J., assignors to Faunce and Associates, Inc., Fanwood, N.J.

Filed Nov. 19, 1979, Ser. No. 95,430
Int. Cl.³ B01D 57/00
U.S. Cl. 210—693 8 Claims



1. A process for separating oil from water in a mixture containing oil and water, comprising:

(a) feeding said mixture to a heated hold-up tank via an inlet located at a lower level of said tank, said tank having a residence time sufficient to permit the separation of oil and water and the formation of a water-in-oil emulsion which rises to float atop of said water, said tank being heated to a temperature within the range of about 160° F. to about 180° F.;

(b) removing water from the bottom of said heated hold-up tank;

(c) removing said water-in-oil emulsion from the top of said heated hold-up tank via an outlet located above the top of said water in said heated hold-up tank;

(d) feeding said water-in-oil emulsion to a hold-up tank having a first compartment and a second compartment, said feeding being to said first compartment;

(e) permitting water contained in said fed water-in-oil emulsion to settle to the bottom of said first compartment;

(f) withdrawing water from the bottom of said first compartment;

(g) removing oil from the top of said first compartment to said second compartment via a hydrophobic wick; and

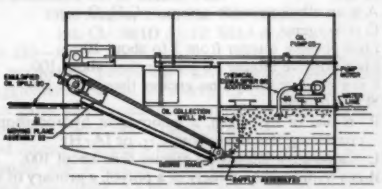
(h) removing said oil from said second compartment.

4,316,806

METHOD AND DEMULSIFIER COMPOSITION

Gerard P. Canevari, Cranford, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Sep. 22, 1980, Ser. No. 189,713
Int. Cl.³ B01D 17/04
U.S. Cl. 210—708 48 Claims



48. A method of demulsifying a water/crude oil emulsion, comprising the steps of:

(a) displacing one liquid from a surface of a bi-wetted solid

disposed at a boundary of a water droplet and oil phase continuum with another liquid via reduction of liquid-solid interfacial tension at said boundary, and

(b) displacing an indigenous crude oil surfactant film by another surfactant that permits water droplet coalescence and separation from said oil phase continuum.

4,316,807

VISCOSIFYING AGENT

Carl V. McDaniel, Laurel, and Nelson S. Marans, Silver Spring, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Apr. 3, 1978, Ser. No. 892,543

Int. Cl.³ C09K 7/00

U.S. Cl. 252—8.5 A **43 Claims**

1. A silane-modified inorganic composition consisting essentially of a reaction product of an inorganic oxide hydrogel selected from hydrogels of silicon oxide, aluminum oxide or mixtures thereof and a silane represented by the formula $R_xSiR'_{4-x}$ wherein R is a C_1 to C_{20} hydrocarbon, R_1 is a halo or a C_1–C_{20} alkoxy radical and x is an integer of from 1 to 3; said reaction product formed by initiating the formation of the hydrogel by contacting an aqueous solution containing from about 5 to 50 weight percent of a water soluble hydrogel forming precursor agent selected from the group consisting of water-soluble alkali metal or ammonium silicates, water soluble alkali metal or ammonium aluminates, aluminum salts and mixtures thereof with a sufficient amount to cause formation of said hydrogel of a neutralizing agent; contacting prior to complete gelation and under a high degree of agitation, the forming hydrogel with from about 0.01 to 0.3 mole of said silane per mole of oxide; and causing the resultant aqueous hydrogel system to have an alkaline pH of at least about 9.

4,316,808

METHOD FOR BREAKING PETROLEUM EMULSIONS AND THE LIKE USING MICELLAR SOLUTIONS OF THIN FILM SPREADING AGENTS COMPRISING AN ACYLATED POLYETHER POLYOL

Charles M. Blair, Jr., Buena Park, Calif., assignor to Magna Corporation, Santa Fe Springs, Calif.

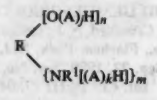
Filed Oct. 5, 1979, Ser. No. 82,346

The portion of the term of this patent subsequent to Aug. 12, 1997, has been disclaimed.

Int. Cl.³ B01D 17/04

U.S. Cl. 252—8.55 D **53 Claims**

1. A method for breaking petroleum emulsions of the water-in-oil type characterized by subjecting the emulsion to the action of a homogeneous micellar solution of a thin film spreading agent, said micellar solution comprising: (1) from between about 5% and about 75% by weight of an acylated polyether polyol having the formula:



wherein:

A is an alkylene oxide group, $-C_iH_{2i}O-$;

O is oxygen;

i is a positive integer from 2 to about 10;

j is a positive integer no greater than about 100;

k is a positive integer no greater than about 100;

N is nitrogen;

R^1 is one of hydrogen, a monovalent hydrocarbon group containing less than about C_{11}, or $[A_LH]$;

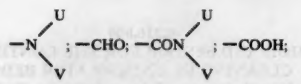
L is a positive integer no greater than about 100;

R is a hydrocarbon moiety of a polyol, a primary or secondary amine, a primary or secondary polyamine, a primary or secondary amino alcohol, or hydrogen; and

m+n is no greater than about 4 when R is other than hydrogen and one of m and n is zero and the other is unity when R is hydrogen, said acylated polyether polyol being the reaction product of said polyether polyol and a member selected from the class consisting of mono- and polybasic carboxylic acids, acid anhydrides, and iso-, diiso-, and polyisocyanates, said acylated polyether polyol at about 25° C.: (a) being less than about 1% by volume soluble in water and in isooctane; (b) having a solubility parameter in the range of between about 6.9 and about 8.5; and (c) spreading at the interface between distilled water and refined mineral oil to form a film having a thickness no greater than about 20 Angstroms at a spreading pressure of about 16 dynes per cm; (2) from between about 2% and about 30% by weight of a hydrotropic agent having one of the formulas:

X-Z (A)

wherein X is an alkyl, alicyclic, aromatic, alkylalicyclic, alkylaryl, arylalkyl, alicyclicalkyl, heterocyclic or substituted heterocyclic radical having 2 to 13 carbon atoms; and wherein Z is one of: —OH;

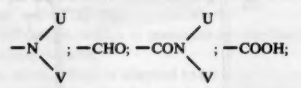


and $-OCH_3$; and U and V are hydrogen or hydrocarbon substituents;

$-X-Y-R-(Z)_n$ (B)

wherein:

Z is one of —OH;



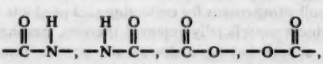
and $-OCH_3$;

X is an alkyl, alicyclic, aromatic, alkylalicyclic, alkylaryl, arylalkyl, alicyclicalkyl, heterocyclic or substituted heterocyclic radical having 2 to 12 carbon atoms;

R is a member selected from the class consisting of, $-CH_2-$, $-C_2H_4-$, $-C_3H_5=$, $-C_3H_6$, and $-C_2H_4-O-C_2H_4-$;

n is either a one or two integer, the integer dependent upon the selection of R; U and V are hydrogen or hydrocarbon substituents; and

Y is a member selected from the class consisting of:



—O—, and —S—;

(3) from between about 2% and about 30% by weight of an amphipathic agent having at least one radical having from between about 10 and about 64 carbon atoms per molecule; and

(4) from between about 15% and about 90% by weight, water.

4,316,809
MICELLAR FLUID FOR LOW AND HIGH HARDNESS CRUDE OIL DISPLACEMENT

Thomas D. Griffith, Tulsa, and Daniel S. Denham, Jenks, both of Okla., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Nov. 13, 1979, Ser. No. 93,359
Int. Cl.³ E21B *43/22*
U.S. Cl. 252—8.55 D **5 Claims**

1. In a method of displacing oil through at least a portion of a crude oil containing subterranean reservoir having an injection means in fluid communication through the reservoir with a production means, wherein an aqueous micellar slug is injected into the reservoir at said injection means and is displaced through at least a portion of said reservoir for displacing crude oil toward said production means, wherein the improvement comprises:

injecting into a reservoir containing both low hardness water containing less than about 0.001 normal polyvalent cations and high hardness water containing in excess of about 0.01 normal polyvalent cations an aqueous micellar slug consisting essentially of greater than a critical micelle concentration of a crude oil displacing hydrocarbon sulfonate surfactant, about 0.5 to about 5 weight percent of a water soluble salt of a sulfated, oxyalkylated alcohol having the following general formula:

$$C_xH_{2x+1}O(C_yH_{2y+1}O)_zSO_3M$$

wherein:

x is a positive integer within the range of 8 to about 20,

y is a positive integer within the range of 2 to 6,

z is a positive integer within the range of 1 to 10,

m is an alkali metal, ammonium, or water soluble quaternary ammonium ion, or a water soluble amine or a mixture thereof,

and about 0.5 to about 5 weight percent of amyl alcohol.

4,316,810
GELLED OIL BASE COMPOSITIONS AND METHODS OF PREPARATION AND USE OF SAME

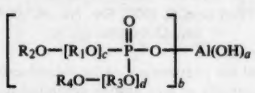
John W. Burnham, Oklahoma City, Okla., assignor to Halliburton Company, Duncan, Okla.

Continuation-in-part of Ser. No. 898,056, Apr. 20, 1978, abandoned. This application Jan. 7, 1980, Ser. No. 109,984
Int. Cl.³ E21B *43/26*
U.S. Cl. 252—8.55 R **15 Claims**

1. A fracturing composition consisting essentially of:

an oil base liquid; and

from about 0.25 weight percent to about 6.0 weight percent of at least one compound selected from the group of aluminum salts consisting of aluminum oxaalkyl phosphates, aluminum oxaalkyl oxaalkyl phosphates and aluminum oxaalkyl alkyl phosphates, said salts having the structural formula



where

a=0 to 2,

b=1 to 3,

c=1 to 5,

d=1 to 5,

and the sum of a+b=3;

R_1O and R_3O=an alkyloxy, alkenyloxy or alkynyloxy group containing from 1 to 18 carbon atoms, or $CH_2CH(CH_3)O$, or CH_2CH_2O or OH, and

R_2O and R_4O=an alkyloxy, alkenyloxy or alkynyloxy group containing from 1 to 18 carbon atoms,

and where R_1O and R_2O may differ from each other but shall together contain from 1 to 24 carbon atoms, and R_3O and R_4O may differ from each other but shall together contain from 1 to 20 carbon atoms, provided that at least one of R_1O and R_3O shall be either $CH_2CH(CH_3)O$ or CH_2CH_2O, and provided further that where either R_1O or R_3O is neither $CH_2CH(CH_3)O$ nor CH_2CH_2O, then the respective R_2O and R_4O group otherwise bonded thereto shall be deleted and further provided that the number of carbon atoms in at least one of R_1O, R_2O, R_3O and R_4O is at least 6.

4,316,811
DUST SUPPRESSANT

Edward J. Burns, and James R. Hatfield, both of Omaha, Nebr., assignors to InterNorth, Inc, Omaha, Nebr.

Filed Jul. 10, 1980, Ser. No. 167,459
Int. Cl.³ B28D *7/02*; C09K *3/22*; E21C *7/08*; E21F *5/06*
U.S. Cl. 252—88 **2 Claims**

1. A method for suppressing dust formation in coal and for increasing the crushing strength of coal comprising contacting the surface of the coal with an aqueous composition comprising from about 0.01 percent to about 5 percent of polyethylene oxide having a molecular weight of at least about 900,000 and at least about 0.1 grams of polyethylene oxide per 100 square inches of flat surface area of coal is applied to the coal.

2. A method for suppressing dust formation in coal and for increasing the crushing strength of coal comprising contacting the surface of the coal with an aqueous composition comprising from about 0.01 percent to about 2 percent of polyethylene oxide having a molecular weight of at least about 4 million and at least about 0.001 grams of polyethylene oxide per 100 square inches of flat surface area of coal is applied to the coal.

4,316,812
DETERGENT COMPOSITION

Roger I. Hancock, Stockton, and Kathleen M. Morrison, Saltburn, both of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 911,517, Jun. 1, 1978, abandoned. This application Dec. 4, 1979, Ser. No. 100,041
Claims priority, application United Kingdom, Jun. 9, 1977, 24083/77
Int. Cl.³ C11D *7/54*
U.S. Cl. 252—99 **8 Claims**

1. A liquid detergent composition which comprises a dispersion of solids comprising one or more builders and an oxygen bleach, the solids having an average particle diameter of less than 10 microns in a substantially water free non-ionic liquid surfactant which has a pour point of less than 10° C. and no dispersant for the solids.

4,316,813
LIMESTONE-BASED SORBENT AGGLOMERATES FOR REMOVAL OF SULFUR COMPOUNDS IN HOT GASES AND METHOD OF MAKING

Kenneth E. Voss, Somerville, N.J., assignor to Engelhard Minerals & Chemicals Corp., Edison, N.J.

Filed Aug. 4, 1980, Ser. No. 175,227
Int. Cl.³ B01D *53/12*; B01J *8/24*
U.S. Cl. 252—189 **10 Claims**

1. A method for producing highly attrition resistant limestone agglomerates useful for absorption of sulfur compounds from hot gases which comprises (a) providing naturally occurring, uncalcined limestone in the form of fine grains, (b) mixing into said limestone grains a high-temperature stable, cementitious binder and a volatile liquid to form a mass having a paste-like consistency, (c) agglomerating said mass of paste-like consistency in compression-type agglomerating equipment generating shearing, compacting, densifying and squeezing forces to form essentially spheroidal agglomerates, and (e) optionally drying said agglomerates.

4,316,814
SEAL FOR A STORAGE BORE HOLE ACCOMMODATING RADIOACTIVE WASTE AND METHOD OF APPLYING THE SEAL

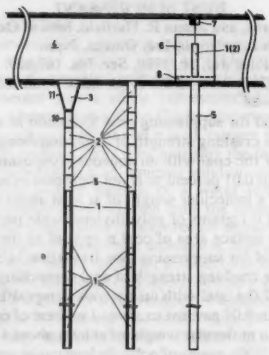
Ernst-Peter Uerpmann, Brunswick, Fed. Rep. of Germany, assignor to Gesellschaft fur Strahlen-und Umweltforschung mbH, Neuherberg b. München, Fed. Rep. of Germany

Filed Sep. 5, 1979, Ser. No. 72,581

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1978, 2839759

Int. Cl.³ G21F *7/00, 9/24*

U.S. Cl. 252—633 **4 Claims**



1. In a storage arrangement for radioactive waste, including a storage bore hole defined by walls of a rock formation, vessels containing radioactive waste deposited in a vertical series in the storage bore hole and a sealing closure situated in the storage bore hole above the uppermost vessel, the improvement wherein said sealing closure includes a prefabricated solid body of alkali-resistant charged bitumen closely conforming, along its circumference, to said walls; said charged bitumen having a density of at least 1.40 g/cm³.

4,316,815
BIS-TRIAZOLYL AND BIS-PYRAZOLYL STILBENE COMPOUNDS

Alec V. Mercer, Bramhope, and Roger Paver, Eldwick, both of England, assignors to Sandoz Ltd., Basel, Switzerland

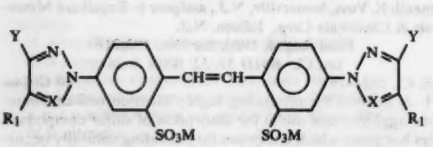
Filed Nov. 12, 1980, Ser. No. 206,328

Claims priority, application United Kingdom, Nov. 14, 1979, 39349/79; Jun. 23, 1980, 20472/80

Int. Cl.³ C07D *403/14, 405/14, 413/14*

U.S. Cl. 252—301.22 **10 Claims**

1. A compound of the formula



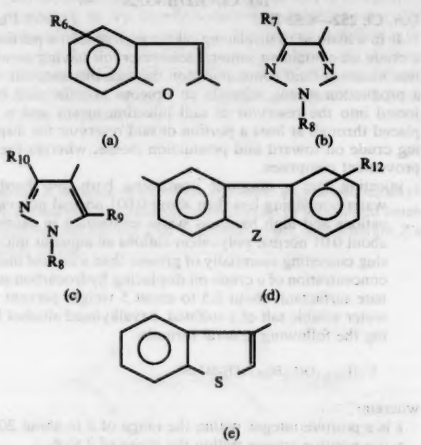
I

in which

both R_1's are the same and are hydrogen, C_{1-4}alkyl, bromine, chlorine, —COOM, $-CONR_2R_3$, $-COOR_4$, —CN, $-SO_3M$, $-SO_2NR_2R_3$ or $-SO_2R_4$, where R_2 and R_3 independently are hydrogen, C_{1-4}alkyl or phenyl with the proviso that only one may be phenyl or R_2 and R_3, together with the nitrogen to which they are attached, form piperidine or morpholine ring and R_4 is C_{1-4}alkyl or phenyl;

both X's are the same and are CR_5 or N, where R_5 is hydrogen, C_{1-4}alkyl or phenyl;

both Y's are the same and are each one of the radicals of formulae (a) to (e)



with the proviso that the Y's are not radical (b) when X=N, R_6 is hydrogen, chlorine, C_{1-4}alkoxy, C_{1-4}alkyl, $-SO_3M$ or phenyl, R_7 is hydrogen or C_{1-4}alkyl, R_8 is an aryl radical unsubstituted or substituted by up to two substituents selected from C_{1-4}alkyl, C_{1-4}alkoxy, chlorine, cyano, —COOM, $-COOR_4$, $-CONR_2R_3$, $-SO_2NR_2R_3$, $-SO_2R_4$ and $-SO_3M$ with the proviso that where the aryl radical is substituted by two substituents at least one of the substituents is C_{1-4}alkyl, C_{1-4}alkoxy or chlorine, R_9 and R_{10} independently are hydrogen or C_{1-4}alkyl; R_{12} is H or $-SO_3M$ and Z is O or S; and M is hydrogen or a non-chromophoric cation.

4,316,816
METHOD FOR PREPARING COPPER-ALUMINUM-GOLD-ACTIVATED ZINC-SULFIDE PHOSPHORS

Martin R. Royce, Lancaster, and Donnavon D. Shaffer, Lititz, both of Pa., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 6, 1978, Ser. No. 967,094

Int. Cl.³ C09K *11/50*

U.S. Cl. 252—301.6 S **6 Claims**

1. A method for preparing a cathodoluminescent phosphor consisting essentially of zinc sulfide activated with aluminum, copper and gold comprising heating in a covered container a mixture consisting essentially of zinc sulfide, an activator quantity of copper as a compound thereof, an activator quantity of aluminum as a compound thereof, an activator quantity of gold as a compound thereof, ammonium iodide in an amount that is adequate to accelerate the incorporation of said quantities of copper, aluminum and gold into said zinc sulfide, elemental selenium in an amount such that said quantity of gold is more readily incorporated into said zinc sulfide, elemental sulfur and elemental carbon at temperatures in the range of about 900° to 1050° C. for a period of about 0.25 to 1.0 hour, and then cooling the reaction product.

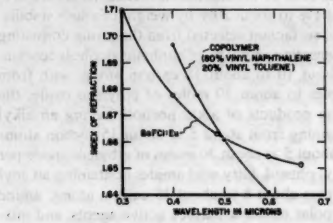
4,316,817
INDEX-MATCHED PHOSPHOR SCINTILLATOR STRUCTURES

Dominic A. Cusano, Schenectady, N.Y.; Robert K. Swank, Colorado Springs, Colo., and Philip J. White, Solon, Ohio, assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 863,876, Dec. 23, 1977, abandoned. This application Jul. 15, 1980, Ser. No. 169,023

Int. Cl.³ C09K *11/465, 11/24, 11/12, 11/06*

U.S. Cl. 252—301.18 6 Claims



1. A method of producing scintillator bodies for use in computerized tomography with increased detectable optical output from a phosphor which absorbs electromagnetic radiation at supra-optical frequencies and emits electromagnetic radiation at optical frequencies, said method comprising the steps of:

(A) dissolving in a suitable solvent a polyvinyl naphthalene toluene polymer having an index of refraction equal to the index of refraction of BaFCl:Eu phosphor, at approximately the wavelength of the optical emission of the phosphor, said polymer being substantially transparent to the optical wavelength radiation emitted by the phosphor and also being substantially transparent to supra-optical electromagnetic radiation;

(B) adding the phosphor to the solution in step A;

(C) freeze-drying the solution from step B, whereby the solvent is removed;

(D) pulverizing the freeze-dried material from step C, to form a powder with an approximately homogeneous particle size distribution;

(E) heating the powder from step D at a sufficiently high temperature and pressure to cause the polymer to flow forming a solid body, but below a temperature so high as to cause decomposition of any component.

6. The scintillator body produced in accordance with claim 1.

4,316,818
POLYMERIZATION CATALYST AND PROCESS

Melvin B. Welch, and Richard E. Dietz, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 6, 1980, Ser. No. 194,306

Int. Cl.³ C08F *4/64, 4/02*

U.S. Cl. 252—429 B 13 Claims

1. A catalyst for the homopolymerization and copolymerization of alpha-olefins characterized as the product obtained by

(a) reacting finely divided magnesium oxide at an elevated temperature with a halogenating agent,

(b) treating the particulate product obtained in (a) with a monohydric alcohol, and

(c) contacting the particulate product formed in (b) with a tetravalent halogenated titanium compound at a temperature and for a period of time sufficient to form a catalyst component (A).

4,316,819
TECHNIQUE TO REDUCE THE ZEOLITE MOLECULAR SIEVE SOLUBILITY IN AN AQUEOUS SYSTEM

Hosheng Tu, Shorewood, and Stephen W. Sohn, Northbrook, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Aug. 11, 1980, Ser. No. 136,022

Int. Cl.³ B01J *20/18, 20/22*

U.S. Cl. 252—430 7 Claims

1. A method for the preparation of a crystalline aluminosilicate adsorbent which comprises the steps of:

(a) mixing together a powdered crystalline aluminosilicate, a powdered binder comprising a water permeable organic polymer and a liquid organic solvent to form a malleable mixture;

(b) forming said malleable mixture into discrete formations;

(c) then spheronizing said formations; and

(d) thereafter removing said solvent from the resultant spheres to produce hard, dry spherical particles.

4,316,820
CATALYST, PREPARATION THEREOF AND USE THEREOF IN THE PREPARATION OF TELOMERIC POLYBUTADIENE HOMO- OR CO-POLYMERS

Wolfgang Wieder, Leverkusen, and Josef Witte, Cologne, both of Fed. Rep. of Germany, assignors to Bayer AG, Fed. Rep. of Germany

Filed Feb. 11, 1980, Ser. No. 120,626

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1979, 2905763

Int. Cl.³ B01J *31/12*

U.S. Cl. 252—431 N 4 Claims

1. A catalyst comprising the reaction product of

(a) an organometallic compound of the formula RLi wherein R is a saturated aliphatic or aromatic hydrocarbon radical having from 2 to 8 carbon atoms;

(b) a compound of the formula R'OMe' wherein R' is a saturated aliphatic or aromatic hydrocarbon radical having from 2 to 8 carbon atoms and Me' is alkali metal and

(c) pentamethyldiethylenetriamine, the molar ratio of (a) to (b) being from 0.1:1 to 50:1 and the molar ratio of (a) to (c) being from 0.1:1 to 10:1.

4,316,821
METHOD FOR THE PRODUCTION OF CATALYSTS

Katarzyna Brückman, Uxbridge, England, assignor to Tioxide Group Limited, Billingham, England

Filed Oct. 8, 1980, Ser. No. 195,255

Claims priority, application United Kingdom, Sep. 16, 1980, 29800/80

Int. Cl.³ B01J *21/06, 23/22*

U.S. Cl. 252—461 22 Claims

1. A method for the production of a monolayer catalyst which comprises mixing a chosen catalyst substrate having bound water residues on its surface and being substantially free of physisorbed water with a catalyst precursor decomposable to a catalytically effective compound with said precursor being dissolved in an organic solvent therefor, allowing said precursor to react with said bound water residues, removing any excessive precursor and solvent, decomposing said precursor reacted with said surface to a catalytically effective compound and recovering the so-treated catalyst substrate.

4,316,822

CATALYST FOR PURIFYING EXHAUST GASES

Yoshiyasu Fujitani; Hideaki Muraki, both of Nagoya; Shiroh Kondoh, Aichi; Makoto Tomita, Obu; Kouji Yokota, Nagoya; Hideo Sobukawa, Nagoya, and Tamotsu Nakamura, Nagoya, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed Dec. 8, 1980, Ser. No. 214,279
Claims priority, application Japan, Dec. 19, 1979, 54/166065
Int. Cl.³ B01J *21/06, 23/10, 23/42, 23/44*
U.S. Cl. 252—462 16 Claims

1. A catalyst for reducing nitrogen oxides, carbon monoxide and hydrocarbons, the noxious components in exhaust gases comprising:

a porous carrier of ceramic; and

a catalyst ingredient supported thereon consisting essentially of zirconium oxide, cerium oxide and a metal selected from the group consisting of platinum, palladium and mixtures thereof.

4,316,823

METHOD OF MANUFACTURING A MONOLITHIC METALLIC MATRIX COATED WITH A CATALYSIS PROMOTING METAL OXIDE

Alfred Bozon, Erlensee; Edgar Koberstein, Alzenau; Hans-Dieter Pietka, Freigericht, and Herbert Voelker, Hanau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 18, 1980, Ser. No. 208,082
Claims priority, application Fed. Rep. of Germany, Nov. 20, 1979, 2946685
Int. Cl.³ B01J *21/04, 23/26, 35/04*
U.S. Cl. 252—465 26 Claims

1. In the method of manufacturing a mechanically stable, monolithic metal matrix having a vertical axis and opposed end faces and which is coated with a catalysis promoting metal oxide, is disposed in a metal jacket and comprises alternately superposed plain and corrugated or folded metal sheets of scale-resistant and high temperature resistant metal and in which the metal sheets are stacked in a pile or wound into a spiral, the improvement which comprises disposing one of the end faces of the matrix on a base electrode plate connected to one pole of a current source, and disposing the other, opposite end face on a second cover electrode plate connected to the other pole of the current supply, passing a welding current through the arrangement of matrix and electrode plates once or a plurality of times to weld the metal plates at said end face disposed on said base electrode plate, then disposing the matrix in a way whereby the initially upper end face which is still unwelded lies on the base electrode plate and repeating the welding process, disposing and then welding the matrix in the metal jacket by means of an electric arc guided over the metal jacket in accordance with a predetermined weld path with the incorporation of at least one outer metal sheet of said matrix, and coating the interior of the composite body thereby obtained with a catalysis promoting metal oxide.

4,316,824

LIQUID DETERGENT COMPOSITION CONTAINING ALKYL SULFATE AND ALKYL ETHOXYLATED SULFATE

Eugene J. Pancheri, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 163,031, Jun. 26, 1980, abandoned. This application Jan. 8, 1981, Ser. No. 223,541
Int. Cl.³ C11D *1/12*
U.S. Cl. 252—551 9 Claims

1. A liquid detergent composition consisting essentially of:

(a) from about 10% to about 50% by weight of an anionic surfactant which has the general formula

$$RO(C_2H_4O)_xSO_3M$$

wherein R is an alkyl group containing from about 10 to about 16 carbon atoms, M is selected from the group consisting of sodium, potassium, ammonium, monoethanolammonium, diethanolammonium, triethanolammonium, calcium and magnesium cations and mixtures thereof, and the ethoxylate distribution is such that, on a molar basis the compounds wherein x is 0 are from about 54% to about 60%, wherein x is 1 are from about 5% to about 20%, wherein x is 2 are from about 10% to about 13%, and wherein x is 3 are from about 6% to about 7% of the anionic surfactant, and there is sufficient magnesium to at least neutralize 50% of the anionic surfactant wherein x is 0;

(b) from about 1% to about 20% by weight of a suds stabilizing nonionic surfactant selected from the group consisting of the condensation products of aliphatic alcohols containing from about 10 to about 18 carbon atoms with from about 5 moles to about 30 moles of ethylene oxide, the condensation products of alkyl phenols having an alkyl group containing from about 6 to about 15 carbon atoms with from about 5 to about 30 moles of ethylene oxide per mole of alkyl phenol, fatty acid amides containing an acyl moiety of from about 8 to about 18 carbon atoms, amine oxide semi-polar nonionic surface active agents, and mixtures thereof;

(c) from 0% to about 10% of a detergency builder selected from the group consisting of sodium tripolyphosphate, sodium carbonate, potassium carbonate, sodium pyrophosphate, potassium pyrophosphate, potassium tripolyphosphate, sodium hexametaphosphate, sodium citrate, potassium citrate, sodium tartrate, potassium tartrate, sodium ethylenediamine tetraacetate, potassium ethylenediamine tetraacetate, sodium N-(2-hydroxyethyl)-ethylenediamine triacetate, potassium N-(2-hydroxyethyl)-ethylenediamine triacetate, sodium nitrilotriacetate, potassium nitrilotriacetate, sodium N-(2-hydroxyethyl)-nitrilodiacetate, potassium N-(2-hydroxyethyl)-nitrilodiacetate, and mixtures thereof; and

(d) from about 20% to about 88% water.

4,316,825

HIGH GREEN STRENGTH RUBBERS

Kenneth H. Wirth, Baton Rouge, La., assignor to Copolymer Rubber & Chemical Corp., Baton Rouge, La.

Continuation-in-part of Ser. No. 80,509, Oct. 1, 1979, abandoned. This application Nov. 28, 1980, Ser. No. 211,123
Int. Cl.³ C08L *7/00*
U.S. Cl. 260—5 14 Claims

7. A rubber compound having good green strength and elongation in the uncured stage comprising a blend of an SBR based rubber is selected from the group consisting of styrene-butadiene rubber and blends of the sytrene-butadiene rubber with polybutadiene rubber, polyisoprene rubber or natural rubber polymer with an EPM polymer having a high degree of crystallinity formed by interpolymerization of ethylene and one or more C_3–C_{16} monoolefins or an EPDM interpolymer formed by interpolymerization of ethylene, one or more C_3–C_{16} monoolefins and a polyene in the ratio of 50–95 parts by weight of the rubbery polymer per 50–5 parts by weight of the EPM or EPDM, in which the ratio of ethylene to C_3–C_{16} monoolefin in the EPM and EPDM is within the range of more than 80 mole percent ethylene to less than 20 mole percent C_3–C_{16} monoolefin.

4,316,826

CLAY AND CEMENT MORTARS, METHODS OF PREPARING THEM

Michel Laquerbe, 20, Avenue des Buttes de Coesmes, Beaulieu-35.000 Rennes, and Francois Tatard, 119, rue de Fougeres, 35,000 Rennes, both of France

Continuation-in-part of Ser. No. 813,965, Jul. 8, 1977, abandoned. This application Jul. 19, 1979, Ser. No. 58,922
Claims priority, application France, Jul. 21, 1978, 78 21747
Int. Cl.[3] C04B *7/00, 7/02, 7/356, 31/00*
U.S. Cl. 260—15 2 Claims

1. Method of preparation of a clay-cement mortar comprising a mixture of clay, cement and an additive selected from the group consisting of urea-formaldehyde resins, melamine-formaldehyde resins and formamide, the proportion by weight of the clay being greater than that of the cement and the percentage by weight of the additive, calculated as weight of dry extract of this additive with respect to the dry extract weight of the clay-cement mixture, being between 1 and 20%, together with a weight of paraffin solid at ordinary temperature comprised between 0.3 and 5% of the weight of the cement, characterized in that said paraffin is melted and dissolved in an organic solvent composed substantially of equal parts of a hydrocarbon and acetone, the resulting paraffin solution being mixed with a substantially equivalent amount of water and with said clay, cement, additive and a cellulosic compound.

4,316,827

RUBBER MODIFIED PHENOLIC FRICTION PARTICLES

Luba A. Pacala, and John R. Blickensderfer, both of Belle Mead, N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed Apr. 17, 1980, Ser. No. 141,140
Int. Cl.[3] C08L *5/12, 9/00, 11/00, 61/06*
U.S. Cl. 260—17.2 26 Claims

1. A substantially completely cured particulate resin comprising:

(I) a mixture of phenols said mixture comprised of from 25 to 100 mole percent of tri- and/or tetrafunctional phenols and from 0 to 75 mole percent of difunctional phenols;

(II) from 1.1 to 3 moles per mole of phenol moiety of an aldehyde containing from 1 to 11 carbon atoms;

(III) from 0 to 1 mole per mole of phenol moiety of a reaction promoting compound chosen from the group of the primary, secondary and tertiary amines having up to 10 carbon atoms;

(IV) from 0.05 to 6 weight percent, based on the weight of components (I), (II), (III) and (V) of a protective colloid; and

(V) from 1 to 40 weight percent, based on the weight of component (I) of a rubber which is capable of forming a latex wherein the latex is compatible with components (I)–(IV).

17. A friction element comprising about 30 to 70 weight percent of a high friction fibrous material, up to about 40 weight percent of an organic filler material, from about 5 to 30 weight percent of a friction binder, and about 1 to about 25 weight percent of a friction particle comprising:

(I) a mixture of phenols said mixture comprised of from 25 to 100 mole percent of tri- and/or tetrafunctional phenols and from 0 to 75 mole percent of difunctional phenols;

(II) from 1.1 to 3 mole percent of phenol moiety of an aldehyde containing from 1 to 11 carbon atoms;

(III) from 0 to 1 mole per mole of phenol moiety of a reaction promoting compound chosen from the group of the primary, secondary and tertiary amines having up to 10 carbon atoms;

(IV) from 0.05 to 6 weight percent, based on the weight of components (I), (II), (III) and (V) of a protective colloid; and

(V) from 1 to 40 weight percent, based on the weight of component (I) of a rubber which is capable of forming a latex compatible with components (I)–(IV).

4,316,828

BULK NEUTRALIZATION

Henry S. Makowski, Scotch Plains; Robert D. Lundberg, Bridgewater, both of N.J., and Jan Bock, Houston, Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 855,723, Nov. 29, 1977, abandoned. This application Jun. 12, 1979, Ser. No. 47,753
Int. Cl.[3] C08L *91/00*
U.S. Cl. 260—23.5 A 13 Claims

1. A process for forming an elastomeric blend composition of a neutralized sulfonated elastomeric polymer having about 10 to about 60 meq, of sulfonate groups per 100 grams of said neutralized sulfonated elastomeric polymer, which consists of the steps of:

(a) mixing, in the absence of solvent, at least one additive with an unneutralized form of said sulfonated elastomeric polymer to form a mixture, said additive being selected from the group consisting of fillers and oils and mixtures thereof;

(b) compounding said mixture at a temperature of less than about 150° F., thereby forming a homogeneous blend;

(c) adding a neutralizing agent in the absence of solvent to said homogeneous blend and further compounding said homogeneous blend at less than about 150° F. for a sufficient period of time to completely neutralize said unneutralized form of said sulfonated elastomeric polymer, thereby forming said blend composition of at least one said additive and said neutralized sulfonated elastomeric polymer, wherein said sulfonate group of said sulfonated elastomeric polymer are completely neutralized.

4,316,829

MODIFIED ASPHALT COMPOSITIONS

Michael G. Roberts, Heath, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Sep. 25, 1980, Ser. No. 191,053
Int. Cl.[3] C08L *95/00*
U.S. Cl. 260—28.5 AS 10 Claims

1. A chemically-modified asphalt composition comprising the reaction product of (1) an asphalt which has been prereacted with a polymerizable vinyl aromatic monomer in an amount within the range of 0.5 to 35% by weight based on the weight of the asphalt and having the formula: $CH_2{=}CH{-}R$ wherein R is an aromatic group containing 6 to 12 carbon atoms and (2) a polyester in an amount within the range of 5 to 75% by weight based on the weight of the asphalt.

4,316,830

SURFACTANT FREE PROCESS FOR PRODUCTION OF PRESSURE SENSITIVE ADHESIVE LATEXES

Charles B. Mallon, Belle Mead, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Filed Feb. 19, 1980, Ser. No. 122,377
Int. Cl.[3] C08L *33/02, 33/06*
U.S. Cl. 260—29.6 MQ 22 Claims

1. A process for the production of pressure sensitive adhesive latexes having a glass transition temperature of from −70° C. to −20° C., said process characterized by the essential absence of surfactants or other stabilizers during the polymerization reaction, comprising the reaction at from 25° C. to 125° C. of

(I) a monomer mix comprising

(A) from 40 weight percent to 100 weight percent of at least one acrylic or methacrylic acid ester;

(B) from 0 weight percent to 30 weight percent of at least one vinyl ester of an aliphatic acid; and

(C) from 0 weight percent to 20 weight percent of at least one ethylenically unsaturated carboxylic acid;

wherein the concentrations are based on the total weight of the monomers mix; and

(II) from 0.05 weight percent to 1 weight percent based on the total weight of the monomers mix of a polymerization initiator capable of producing hydrophilic ionic end groups;

said reaction occuring in the presence of sufficient water such that the resulting latex has a polymer concentration not exceeding 70 weight percent of the total weight of the latex.

4,316,831

MATERIAL FOR TREATING COKE OVEN DOORS AND JAMBS TO PREVENT THE BUILD UP OF TAR THEREON

Micheal D. LaBate, 110 N. Hazen Ave., Ellwood City, Pa. 16117

Continuation-in-part of Ser. No. 49,349, Jun. 18, 1979, abandoned. This application Aug. 25, 1980, Ser. No. 181,123

Int. Cl.³ C08L *31/00*; B28B *7/36*

U.S. Cl. 260—29.6 S **5 Claims**

1. A normally liquid suspension material for forming penetrating and lubricating adhesive coatings on coke oven doors and jambs and comprising between about 5% to 25% by weight submicron sized particles of graphite having a particle size less than about 4 mμ as determined by electron microscopy, said submicron sized particles being small enough to penetrate into the grain structure of coke oven doors and jambs, between about 34% to 75% of a solution of water and sodium silicate ($Na_2Si_3O_7$), wherein the sodium silicate is present at about 40% of the solution, between about 2% to 10% concentrated hydrochloric acid of a 90% purity by weight, between about 33% to 75% of a solution water and a water soluble resin of containing carboxyl groups wherein the resin is present in amounts between 1% and 10% of the solution by weight and between about 15% to 20% water by weight.

4,316,832

PLASTICIZER COMPOSITIONS FOR USE WITH SYNTHETIC RESIN POLYMERS

David J. Walkden, Salford, England, assignor to Diamond Shamrock Industrial Chemicals Limited, Manchester, England

Filed Mar. 9, 1978, Ser. No. 884,856

Claims priority, application United Kingdom, Mar. 10, 1977, 10121/77

Int. Cl.³ C08K *5/12*

U.S. Cl. 260—31.8 N **15 Claims**

1. A solid, essentially homogeneous plasticiser composition which consists essentially of:

(a) the phthalate ester of an aliphatic alcohol containing from 5 to 12 carbon atoms in the aliphatic moiety; and, intimately mixed therewith,

(b) an hydroxy terminated polyurethane resin having an NCO index of from 60 to 100 which is the reaction product of a di-isocyanate and a polyester based upon two dicarboxylic acids, one of which is terephthalic acid, and a diol.

4,316,833

WATERPROOFING MATERIAL CONTAINING BENTONITE

Bryan M. McGroarty, 10233 Chicago Cir., Bloomington, Minn. 55420

Continuation-in-part of Ser. No. 897,783, Apr. 19, 1978, abandoned. This application Nov. 5, 1979, Ser. No. 91,599

Int. Cl.³ C08K *5/01*

U.S. Cl. 260—33.6 PQ **10 Claims**

1. A coating material for waterproofing constructed structures comprising an initial mixture of sodium montmorillonite bentonite saturated with a fluidizing material selected from the group consisting of liquid aliphatic or alicyclic hydrocarbon compounds, and a non-aqueous adhesive agent not displaceable by water ranging between five to ten percent by weight of the coating material, said non-aqueous adhesive agent causing a bond between the bentonite particles without displacing the liquid fluidizer agent and without penetrating the particles, the coating material comprising between 20 to 25 pounds of fluidizing agent to 100 pounds of bentonite.

4,316,834

WEAR RESISTANT SLIDING ELEMENT HAVING A LOW COEFFICIENT OF FRICTION

Hiroshi Ueda, Kasugai; Masao Shimazaki, and Yasumitsu Kuwazuru, both of Toyota, all of Japan, assignors to Taiho Kogyo Co., Ltd., Aichi, Japan

Continuation-in-part of Ser. No. 107,628, Dec. 27, 1979. This application Apr. 1, 1981, Ser. No. 249,883

Claims priority, application Japan, Mar. 14, 1979, 54-29482

Int. Cl.³ C08L *6/06*

U.S. Cl. 260—38 **16 Claims**

1. A sliding element comprising a hot pressed body, said hot pressed body comprising: from 30 to 80% of a graphite powder including from approximately 15 to 60% of coarse graphite powder having a grain size of from 32 to 80 μm, and the balance of fine graphite powder having a grain size of less than 32 μm; from approximately 0.5 to 30% of lead-containing powder; and, from approximately 15 to approximately 45% of an organic resin binder, all percentages being by weight based on the weight of the hot pressed body.

4,316,835

POLYESTER RESIN COMPOSITIONS

Hugh C. Gardner, Somerville, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 34,997, May 1, 1979, abandoned. This application Apr. 16, 1980, Ser. No. 136,421

Int. Cl.³ C08L *67/00*

U.S. Cl. 260—40 R **9 Claims**

1. A curable liquid mixture comprising:

(a) a polyester of the following formula

(I)

wherein n has an average value between 1.5 and about 2, m is 2-n, R is the hydroxyl-free residue of a predominantly hydroxyl terminated polyester obtained by the condensation of a diol selected from the class consisting of 1,2-propylene glycol, 1,3-butanediol, 2,2-dimethyl-1,3-propanediol, dipropylene glycol, diethylene glycol, the ethylene and propylene oxide derivatives of 2,2-bis-(4-hydroxyphenyl)-propane, and mixtures thereof, and mixtures of ethylene glycol and said diols, with a dicarboxylic acid selected from the class consisting of maleic acid, furmaric acid, ortho-phthalic acid, isophthalic acid, terephthalic acid, and carbic acid or anhydride selected from maleic anhydride, ortho-phthalic anhydride and carbic anhydride, and mixtures of said acids and anhydrides,

(b) maleic anhydride,

(c) an ethylenically unsaturated monomer which forms a homogeneous mixture with and is copolymerizable with (a) and (b), and wherein the molar ratio of polymerizable double bonds in (c) as compared to those in (a) plus (b) is between about 1 and about 3.6.

6. A composition as in claim 1, which contains a reinforcing fiber.

7. A composition as in claim 6 wherein the reinforcing fiber is selected from fiberglass, carbon fibers, or polyamide fibers.

4,316,836

STABILIZED FLUOROELASTOMER COMPOSITIONS

Carl A. Aufdermarsh, Jr., Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 23, 1980, Ser. No. 143,817
Int. Cl.³ C08K 5/08, 5/16
U.S. Cl. 260—42.21 11 Claims

1. A vulcanizable composition comprising a fluoroelastomer which is a terpolymer derived from tetrafluoroethylene, perfluoromethyl perfluorovinyl ether and a cure-site monomer, at least one non-black filler, and a small quantity of at least one quinacridone-type pigment selected from the group consisting of quinacridone, quinacridone quinone, substituted quinacridone, substituted quinacridone quinone, and mixtures and solid solutions of such substituted and unsubstituted quinacridones and quinacridone quinones.

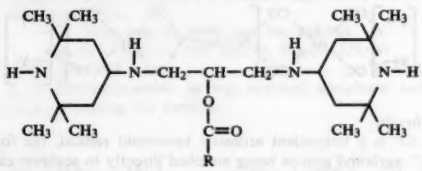
4,316,837

POLYALKYLATED 4-AMINOPIPERIDINE DERIVATIVES AS STABILIZERS FOR SYNTHETIC POLYMERS

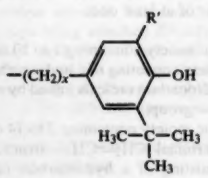
Kenneth R. Molt, and Mary J. Zestermann, both of Cincinnati, Ohio, assignors to Carstab Corporation, Reading, Ohio

Filed Sep. 10, 1980, Ser. No. 185,822
Int. Cl.³ C07D 401/12; C08K 5/34
U.S. Cl. 260—45.8 N 12 Claims

1. A polymeric composition stabilized against photodeterioration comprising a synthetic polymer selected from the group consisting of olefin polymers, halogenated vinyl polymers and polyurethanes and an effective amount of a stabilizer selected from the group consisting of compounds of the formula:



wherein R is a C_1–C_{19} alkyl group, a cycloalkyl group of from 5 to 7 carbon atoms, an unsubstituted aryl group, an aryl group substituted with one or more C_1–C_4 alkyl or C_1–C_4 alkoxy groups, an aralkyl group having 7 or 8 carbon atoms or



where x is an integer from 0 to 4 inclusive and R' is C_1–C_4 alkyl.

4,316,838

FIRE-RETARDANT POLYCARBONATE COMPOSITION

Toshimasa Tokuda, Iyo, Japan, assignor to Teijin Chemicals Ltd., Tokyo, Japan

Division of Ser. No. 958,487, Nov. 7, 1978, Pat. No. 4,222,910. This application Mar. 19, 1980, Ser. No. 131,851
Claims priority, application Japan, Nov. 10, 1977, 52-134107; Dec. 21, 1977, 52-152969; Jan. 19, 1978, 53-3749; Aug. 16, 1978, 53-99017; Aug. 16, 1978, 53-99018
Int. Cl.³ C08K 5/42
U.S. Cl. 260—45.95 G 4 Claims

1. A fire retardant resin composition comprising
(1) an aromatic polycarbonate, and
(2) as a fire retardant, at least one ether derived from alkyl alcohols having from 1 to 10 carbon atoms and at least one phenol selected from the group consisting of phenol, 4-methoxyphenol, 4-phenoxyphenol, naphthol, hydroquinone, phloroglucinol, bisphenol A, bis-(4-hydroxyphenyl-)oxide, bis-(4-hydroxyphenyl)sulfide, bis-(4-hydroxyphenyl)sulfone, 1,1-bis-(4-hydroxyphenyl)cyclohexane, bis-(4-hydroxyphenyl)sulfoxide, bis-(4-hydroxyphenyl)ketone, 2-(4-methoxyphenyl)-2-(4'-hydroxyphenyl)propane, 4-phenoxyphenyl-4'-hydroxyphenylsulfone, 2,2-bis(2-methoxy-4-hydroxyphenyl)propane and halogen-substitution products of these phenols having 1 to 3 halogen substituents on the benzene nucleus thereof, said ether having at least one alkyl group having directly attached to a carbon atom thereof an alkali metal or alkaline earth metal sulfonate group.

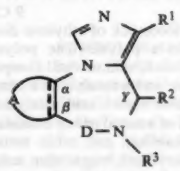
4,316,839

IMIDAZODIAZEPINE DERIVATIVES

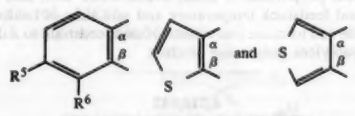
Max Gerecke; Willy Haefely, both of Reinach; Walter Hunkeler, Magden; Emilio Kyburz, Reinach, all of Switzerland; Hanns Möhler, Inzlingen, Fed. Rep. of Germany; Lorenzo Pieri, Riehen, and Petar Polc, Binningen, both of Switzerland, assignors to Hoffman-La Roche Inc., Nutley, N.J.

Filed Oct. 3, 1980, Ser. No. 193,775
Claims priority, application Switzerland, Oct. 4, 1979, 8971/79; Oct. 4, 1979, 8972/79; Nov. 30, 1979, 10664/79; Nov. 30, 1979, 10665/79; Jul. 25, 1980, 5716/80
Int. Cl.³ C07D 487/04, 513/14, 487/14
U.S. Cl. 260—239.3 T 17 Claims

1. A compound of the formula



wherein A together with the two carbon atoms denoted as α and β is selected from the group consisting of



(a) (b) (c)

the dotted line represents the double bond present in groups (a) and (b), D is >C=O or >C=S, R^1 is selected from the group consisting of cyano, lower alkanoyl and a group of the formula —$COOR^4$, R^4 is selected from the group consisting of methyl, ethyl, isopropyl and 2-hydroxyethyl, R^5 is selected from the

group consisting of hydrogen, trifluoromethyl and halogen and R^6 is selected from the group consisting of hydrogen, trifluoromethyl, halogen and lower alkyl and either R^2 is hydrogen and R^3 is hydrogen or lower alkyl or R^2 and R^3 together are trimethylene or propenylene and the carbon atom denoted as γ has the S- or R,S-configuration,

and pharmaceutically acceptable acid addition salts thereof.

17. The compound: Ethyl 8-fluoro-5,6-dihydro-5-methyl-6-oxo-4H-imidazo[1,5-a][1,4]benzodiazepine-3-carboxylate and pharmaceutically acceptable acid addition salts thereof.

4,316,840
REFORMING LINEAR POLYAMINES

Michael E. Ford, Trexlertown, and Thomas A. Johnson, Orefield, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Nov. 25, 1980, Ser. No. 210,209
Int. Cl.³ C07C *85/00, 85/20;* C07D *241/04, 295/12*
U.S. Cl. 260—239 BC **9 Claims**

1. A method for reforming a feedstock of ethylene diamine or polyalkylene polyamine into a polyalkylene polyamine product different from said feedstock, said method comprising heating said feedstock with water and a catalyst to a temperature of 200°–400° C., in a reaction vessel, said catalyst comprised of a metal salt from the group consisting of ammonium sulfate and a sulfate or nitrate of lithium, sodium, potassium, and other metals of group IA of the periodic table; beryllium, magnesium, calcium, and other metals of group IIA of the periodic table; aluminum, zinc, zirconium, antimony, tin (valence states II and IV) and iron (valence states II and III), said method comprising holding said feedstock with water and catalyst at said temperature for 0.5–4 hours, said proportion of catalyst and water with said feedstock, said feedstock temperature and said time of heating all being selected to cause conversion of said feedstock to a different polyalkylene polyamine product.

4,316,841
REFORMING LINEAR POLYAMINES

Michael E. Ford, Trexlertown, and Thomas A. Johnson, Orefield, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Dec. 8, 1980, Ser. No. 214,396
Int. Cl.³ C07C *85/00, 85/20;* C07D *241/04, 295/12*
U.S. Cl. 260—239 BC **9 Claims**

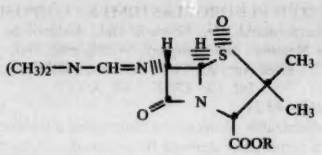
1. A method for reforming a feedstock of ethylene diamine or polyalkylene polyamine into a polyalkylene polyamine product different from said feedstock, said method comprising heating said feedstock with water and a catalyst to a temperature of 200°–400° C., in a reaction vessel, said catalyst comprised of a phosphate compound of a metal group consisting of boron and lithium, sodium, potassium, and other metals of group IA of the periodic table; beryllium, magnesium, calcium, and other metals of group IIA of the periodic table; zirconium, antimony, tin (valence states II and IV) and iron in both the ferrous and ferric states, said method comprising holding said feedstock with water and catalyst at said temperature for 0.5–5 hours, said proportion of catalyst and water with said feedstock, said feedstock temperature and said time of heating all being selected to cause conversion of said feedstock to a different polyalkylene polyamine product.

4,316,842
PENICILLIN INTERMEDIATES

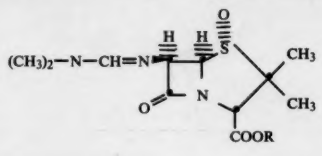
Robert R. Chauvette, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 24, 1980, Ser. No. 209,439
Int. Cl.³ C07D *499/02*
U.S. Cl. 260—245.2 R **5 Claims**

1. A process for preparing the 6-epi-amidinopenicillin α-sulfoxide ester of the formula



wherein R is a carboxy-protecting group, which comprises mixing in an aqueous medium at a temperature between about 0° C. and about 45° C. a 6β-[(dimethylaminomethylene)amino]-2,2-dimethylpenam-4-carboxylic acid ester 1α-oxide of the formula



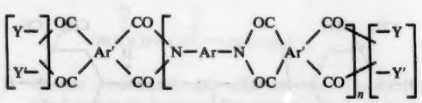
with an alkali metal acetate.

4,316,843
POLYIMIDE DERIVATIVES HAVING TERMINAL UNSATURATED AMIDES

Phillip A. Waitkus, Sheboygan, Wis., and Gaetano F. D'Alelio, South Bend, Ind., assignors to Plastics Engineering Company, Sheboygan, Wis.

Filed Jan. 25, 1980, Ser. No. 115,481
Int. Cl.³ C07D *403/14, 403/10, 519/00, 403/12*
U.S. Cl. 260—326 S **18 Claims**

1. A polyimide-amide having terminal unsaturated amide groups and having the formula:



wherein:

Ar' is a tetravalent aromatic benzenoid radical, the four carbonyl groups being attached directly to separate carbon atoms and each pair of carbonyl groups being attached to adjacent carbon atoms in the Ar' radical except that in the case of the Ar' being a naphthalene radical one or both pairs of the carbonyl groups may be attached to peri carbon atoms;

Ar is a divalent aromatic benzenoid radical;

n or an integer of at least one;

Y is NRR'

R is an organic moiety containing 1 to 20 carbon atoms, said organic moiety consisting of a hydrocarbon radical or two or three hydrocarbon radicals joined by a —O—, —SO_2— or —COO— group;

R' is an organic moiety containing 2 to 14 carbon atoms and having a terminal CH_2=CH— structure, said organic moiety consisting of a hydrocarbon radical or two or three hydrocarbon radicals joined by a —O—, —SO_2— or —COO— group; and

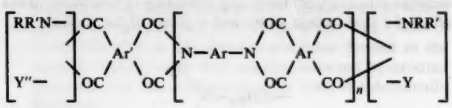
Y' is NRR or —OR.

4,316,844
POLYIMIDE DERIVATIVES HAVING UNSATURATED TERMINAL AMIC ACID GROUPS

Phillip A. Waitkus, Sheboygan, Wis., and Gaetano F. D'Alelio, South Bend, Ind., assignors to Plastics Engineering Company, Sheboygan, Wis.

Filed Jan. 25, 1980, Ser. No. 115,482
Int. Cl.³ C07D *403/10, 403/12, 403/14, 519/00*
U.S. Cl. 260—326 S **19 Claims**

1. A hemi-acid compound of the formula:



wherein:

Ar′ is a tetravalent aromatic benzenoid radical, the four carbonyl groups being attached directly to separate carbon atoms and each pair of carbonyl groups being attached to adjacent carbon atoms in the Ar′ radical except that in the case of the Ar′ being a naphthalene radical one or both pairs of the carbonyl groups may be attached to peri carbon atoms;

Ar is a divalent aromatic benzenoid radical;

n is integer of at least one;

R′ is an organic moiety containing 2 to 14 carbon atoms and having a terminal —CH=CH$_2$ structure; said organic moiety consisting of a hydrocarbon radical or two or three hydrocarbon radicals joined by —O—, —SO$_2$— or —COO— groups

R is an organic moiety containing one to 20 carbon atoms; said organic moiety consisting of a hydrocarbon radical or two or three hydrocarbon radicals joined by —O—, —SO$_2$—, or —COO— groups

Y″ is —OH or X; and

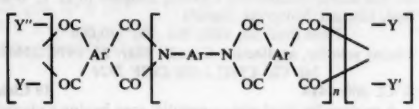
X is a halogen.

4,316,845
POLYIMIDE DERIVATIVES HAVING TERMINAL ACETYLENIC GROUPS

Gaetano F. D'Alelio, South Bend, Ind., and Phillip A. Waitkus, Sheboygan, Wis., assignors to Plastics Engineering Company, Sheboygan, Wis.

Filed Jan. 25, 1980, Ser. No. 115,484
Int. Cl.³ C07D *403/10, 403/12, 403/14, 519/00*
U.S. Cl. 260—326 S **18 Claims**

1. A polyimide-amide having terminal acetylenic amide groups and having the formula:



wherein:

Ar′ is a tetravalent aromatic benzenoid radical, the four carbonyl groups being attached directly to separate carbon atoms and each pair of carbonyl groups being attached to adjacent carbon atoms in the Ar′ radical except that in the case of the Ar′ being a naphthalene radical one or both pairs of the carbonyl groups may be attached to peri carbon atoms;

Ar is a divalent aromatic benzenoid radical;

n is an integer of at least one;

Y is NRR′

R is an organic moiety containing 1 to 20 carbon atoms; said organic moiety consisting of a hydrocarbon radical or two or three hydrocarbon radicals joined by a —O—, —SO$_2$— or —COO— group

R′ is an organic moiety containing 2 to 14 carbon atoms and having a terminal CH≡C— structure, said organic moiety consisting of a hydrocarbon radical or two or three hydrocarbon radicals joined by a —O—, —SO$_2$— or —COO— group; and

Y′ is NRR or —OR.

4,316,846
RECOVERY OF APROTIC AMIDES

Gilbert Gavlin, Lincolnwood, and Romas Cesas, Chicago, both of Ill., assignors to Custom Organics, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 763,868, Jan. 31, 1977, abandoned. This application May 22, 1978, Ser. No. 908,275
Int. Cl.³ C07C *103/127, 103/34, 103/36;* **C07D** *207/06*
U.S. Cl. 260—326.45 **6 Claims**

1. In a process for extracting substantially 95% of an aprotic amide from the class consisting of N,N-dimethylacetamide, N,N-dimethylformamide and N-methyl-2-pyrrolidone from a dilute aqueous solution containing the aprotic amide and water, said dilute aqueous solution containing water in the initial amount of between about 25–90 percent by weight and a maximum of about 25% by weight based on the weight of water of a soluble salt, which process consists essentially of subjecting the dilute aqueous solution to approximately four to six successive extraction steps with substantially equal volume of an organic solvent compound having the following formula

wherein X_1 and X_2 are from the class consisting of —Cl, —CH_2Cl, —$CHCl_2$, —CHClF, —CHF_2, —$CFCl_2$, CF_2Cl, —CF_3, —CHClR, —CCl_2R, —CClFR, —CF_2R;

wherein R is from the class consisting of —CH_3, —C_2H_5 and —C_3H_7 and

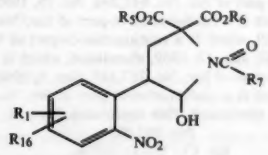
wherein X_3 is from the class consisting of X_1, X_2, R and H, permitting the mixture of organic solvent and aqueous solution in each extraction step to separate into an aqueous phase and an organic solvent phase containing extracted aprotic amide and separating the organic solvent phase from the aqueous phase.

4,316,847
PYRROLES AND PYRROLIDINES

Andrew D. Batcho, North Caldwell; Urs O. Hengartner, Roseland; Willy Leimgruber; John W. Scott, both of Upper Montclair, and Donald Valentine, Jr., Highland Park, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 62,214, Jul. 30, 1979, Pat. No. 4,256,641, which is a division of Ser. No. 965,549, Dec. 1, 1978, abandoned, which is a division of Ser. No. 849,734, Nov. 9, 1977, Pat. No. 4,140,697, which is a division of Ser. No. 698,573, Jun. 22, 1976, Pat. No. 4,073,795. This application Oct. 22, 1980, Ser. No. 199,166
Int. Cl.³ C07D *207/08*
U.S. Cl. 260—326.46 **7 Claims**

1. A compound of the formula:



VI

wherein R_1 and R_{16} each are halogen, lower alkyl, hydroxy,

lower alkoxy, phenyl-(lower-alkyl)oxy, amino, trihalomethyl or hydrogen, R_5 and R_6 each are lower alkyl or hydrogen, and R_7 is lower alkyl, hydrogen, phenyl, halo-lower alkyl or lower alkoxy.

4,316,848

PROCESS FOR THE PURIFICATION OF URSODEOXYCHOLIC ACID

Antonio Bonaldi, Schilpario, and Egidio Molinari, Erba, both of Italy, assignors to Blasinachim S.p.A, Milan, Italy

Filed Jul. 11, 1980, Ser. No. 167,468
Claims priority, application Italy, Jul. 12, 1979, 24316 A/79
Int. Cl.³ C07J *9/00*
U.S. Cl. 260—397.1 **5 Claims**

1. A method for the separation of a mixture selected from the group consisting of: (i) ursodeoxycholic and chenodeoxycholic acids, (ii) a salt of each of said acids, and (iii) an ester of each of said acids, into the components of said mixture, by:

(a) reacting said mixture with a silylating agent in a suitable anhydrous organic solvent, whereby the silyl-derivatives of said components are formed, and

(b) separating said derivatives by crystallization.

5. 3, α, 7β, 24-tris-trimethylsilyl derivative of ursodeoxycholic acid.

4,316,849

PROCESS FOR PREPARING A CRYSTALLINE POLYMORPHOUS TYPE OF CHENODEOXYCHOLIC ACID

Antonio Bonaldi, Schilpario, and Egidio Molinari, Erba, both of Italy, assignors to Blasinachim S.p.A., Milan, Italy

Filed Jul. 11, 1980, Ser. No. 167,469
Claims priority, application Italy, Jul. 12, 1979, 24317 A/79
Int. Cl.³ C07J *9/00*
U.S. Cl. 260—397.1 **4 Claims**

1. A process for preparing crystalline chenodeoxycholic acid melting at about 168–170° C. and free of crystallization solvents, said process consisting essentially of treating humid, amorphous chenodeoxycholic acid at room temperature by shaking or stirring it in bulk so as to cause the particles of the amorphous product to collide, and thereby to assume the desired crystalline form.

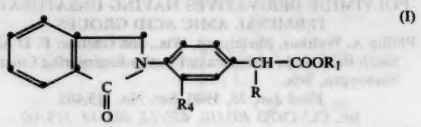
4,316,850

TERTIARY AMINOACIDS

Richard W. J. Carney, New Providence, and George deStevens, Summit, both of N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

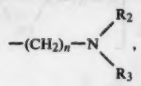
Continuation-in-part of Ser. No. 181,564, Sep. 17, 1971, Pat. No. 3,767,805, which is a continuation-in-part of Ser. No. 40,436, May 25, 1970, abandoned, which is a continuation-in-part of Ser. No. 8,406, Feb. 3, 1970, which is a continuation-in-part of Ser. No. 856,154, Sep. 8, 1969, abandoned, which is a continuation-in-part of Ser. No. 843,244, Jul. 18, 1969, Pat. No. 3,641,040, which is a continuation-in-part of Ser. No. 808,343, Mar. 18, 1969, which is a continuation-in-part of Ser. No. 790,863, Jan. 13, 1969, abandoned, which is a continuation-in-part of Ser. No. 757,136, Sep. 3, 1968, Pat. No. 3,657,230, which is a continuation-in-part of Ser. No. 716,347, Mar. 27, 1968, abandoned. This application Nov. 16, 1972, Ser. No. 307,293
Int. Cl.³ C07D *209/46*
U.S. Cl. 260—326.1 **17 Claims**

1. A compound of the formula

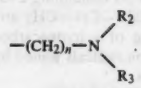


(I)

wherein R is a member selected from the group consisting of hydrogen and lower alkyl of 1 to 4 carbon atoms, R_1 is a member selected from the group consisting of hydrogen, lower alkyl of 1 to 4 carbon atoms and a group of the formula



wherein n is 1 or 2 and R_2 and R_3 are independently selected from the group consisting of hydrogen and lower alkyl of 1 to 4 carbon atoms, and R_4 is a member selected from the group consisting of hydrogen and chlorine; and physiologically acceptable basic addition salts of the compounds of formula (I), wherein R_1 is hydrogen, as well as physiologically acceptable acid addition salts of the compounds of formula (I), wherein R_1 is the group



4,316,851

NICKEL COMPOUNDS

Dominique Le Pennec, Trappes; Dominique Commereuc, Meudon, and Yves Chauvin, Le Pecq, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Sep. 3, 1980, Ser. No. 183,792
Claims priority, application France, Sep. 3, 1979, 79 22153
Int. Cl.³ C07F *15/04*; C09F *7/00*; C11C *3/00*
U.S. Cl. 260—408 **9 Claims**

1. A new nickel compound of the general formula $(R_1COO)(R_2COO)Ni$, where R_1 is a hydroxy substituted or unsubstituted hydrocarbyl radical containing 5–20 carbon atoms and R_2 is a haloalkyl group comprising 1 to 3 carbon atoms.

4,316,852

MANUFACTURE OF METALLIC SOAPS

John Blachford, Westmount, Canada, assignor to H. L. Blachford, Limited, Montreal, Canada

Filed Mar. 13, 1980, Ser. No. 130,080
Claims priority, application Canada, Mar. 29, 1979, 324476
Int. Cl.³ C11C *1/00*; C07F *7/24*
U.S. Cl. 260—414 **19 Claims**

1. A process for producing a metallic soap having a viscosity such that it is a pourable liquid when molten, of a monocarboxylic acid of the formula R-COOH wherein R is a linear or branched, unsubstituted or substituted by one or more hydroxyl groups, saturated or unsaturated aliphatic hydrocarbon radical of 5 to 21 carbon atoms, which comprises:

(i) forming a reaction mixture initially comprising a metal component comprising a metal oxide selected from the group consisting of oxides of cadmium, lead and zinc or a metal hydroxide selected from the group consisting of hydroxides of cobalt, manganese, and zinc, water and a glyceryl ester of formula (I):

$$H_2C(OR_1)CH(OR_2)CH_2(OR_3) \quad \text{(I)}$$

wherein R_1, R_2 and R_3, which may be the same or different, are selected from the group consisting of hydrogen and linear or branched, unsubstituted or substituted by one or more hydroxyl groups, saturated or unsaturated aliphatic hydrocarbon acyl radicals of 6 to 22 carbon atoms, provided that at least one of R_1, R_2 and R_3 is an acyl radical, said ester and said metal oxide or hydroxide being present in at least approximately stoichiometric amounts,

(ii) agitating said reaction mixture,

(iii) reacting the reactants in the agitated mixture to produce a metallic soap and glycerine, at a temperature at which the metallic soap is molten, in the presence of an excess of water effective to dissolve the glycerine formed in the reaction mixture such that reaction between by-product glycerine and the product metallic soap is substantially hindered,

(iv) continuing said reacting in (iii) until substantially no more metallic soap is formed,

(v) allowing the reaction mixture to separate into an aqueous layer and a molten layer of product metallic soap substantially free of metallic oxide or metallic hydroxide, carboxylic acid and glyceryl ester, under a pressure such that said aqueous layer is essentially quiescent, and

(vi) dissociating the molten metallic soap layer from the aqueous layer.

4,316,853

INSECTICIDAL TETRAORGANOTIN COMPOUNDS

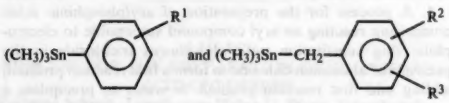
Melvin H. Gitlitz, Edison; John E. Engelhart, Westfield, and David A. Russo, Edison, all of N.J., assignors to M&T Chemicals Inc., Woodbridge, N.J.

Division of Ser. No. 971,940, Dec. 21, 1978, Pat. No. 4,212,810, which is a division of Ser. No. 845,354, Oct. 25, 1977, abandoned. This application Nov. 5, 1979, Ser. No. 91,537

Int. Cl.³ A01N *9/28*; C07D *317/50*

U.S. Cl. 260—429.7 **3 Claims**

1. A tetraorganotin compound exhibiting a formula selected from the group consisting of



wherein R^1 is selected from the group consisting of $—CO_2^{\ominus}Y^{\oplus}$ and $—CO_2R^4$, R^2 and R^3 are individually selected from the group consisting of hydrogen, $—CO_2H$, $—CO_2^{\ominus}Y^{\oplus}$, $—CO_2R^4$, with the proviso that R^2 and R^3 cannot both be hydrogen; R^4 is alkyl having from 1 to 12 carbon atoms; and $Y^{\oplus}$ is a cation selected from the group consisting of alkali metals and ammonium.

4,316,854

PROCESS FOR THE PRODUCTION OF BIS-[0-(1-ALKYLTHIOETHYLIMINO)-N-METHYLCARBAMYL]-N,N-SULFIDES

Jean-Pierre Ledouble, Rosenau, France, and Klaus Müller, Reinach, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

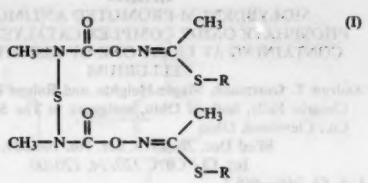
Filed Jun. 6, 1980, Ser. No. 156,966

Claims priority, application Switzerland, Jun. 18, 1979, 5669/79

Int. Cl.³ C07C *119/18*

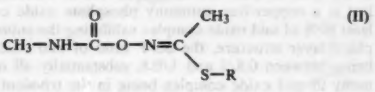
U.S. Cl. 260—453.1 **9 Claims**

1. In a process for the production of bis-[0-(1-alkylthioethylimino)-N-methylcarbamyl]-N,N'-sulfides of the formula



(I)

wherein R is a straight-chain or branched alkyl group of 1 to 5 carbon atoms, by reacting a 0-(1-alkylthioethylimino)-N-methylcarbamate of the formula



(II)

wherein R is as defined above, in the presence of a base, with sulfur dichloride or sulfur monochloride in an inert solvent, the improvement which comprises using a halogenated hydrocarbon as solvent with a dielectric constant of 2.0 to 2.5 and a dipole moment of 0 to 1.

4,316,855

MULTIPLY PROMOTED SN-SB OXIDE CATALYSTS

Robert K. Grasselli, Chagrin Falls; Dev D. Suresh, Macedonia; James F. Brazdil, Lyndhurst, and Frances I. Ratka, Cleveland Heights, all of Ohio, assignors to The Standard Oil Co., Cleveland, Ohio

Filed Dec. 28, 1979, Ser. No. 107,964

Int. Cl.³ C07C *120/14, 120/00*

U.S. Cl. 260—465.3 **2 Claims**

1. In an ammoxidation process in which propylene or isobutylene together with oxygen and ammonia in the vapor phase are contacted with a tin antimonate catalyst at elevated temperature to yield the corresponding unsaturated nitrile, the improvement wherein said tin antimonate catalyst is a tin antimonate oxide complex free of Ti and substantially free of Fe and having the formula

$$A_aD_bTe_dSn_eSb_fO_x$$

wherein

A is one or more elements selected from the group Cu, V, W and Mo;

D is one or more optional elements selected from the group Bi, Ge, Ce, La, Cr, Mn, Mg, Ca, Co, Ni, Nb, Ta, Ag, Zn, Cd, K, Cs, U, B, P and Eu; and

wherein

a is 0.5 to 5;

b is 0 to 10;

d is 0.1 to 2;

e is 0.1 to 10;

f is 12;

$f > a+b+d+e$; and

x is a number sufficient to satisfy the valence requirements of the other elements present

and further wherein Sn/Sb is 1/5 to 1/1.1.

4,316,856
MOLYBDENUM-PROMOTED ANTIMONY PHOSPHATE OXIDE COMPLEX CATALYSTS ALSO CONTAINING AT LEAST ONE OF BISMUTH AND TELLURIUM

Andrew T. Guttmann, Maple Heights, and Robert K. Grasselli, Chagrin Falls, both of Ohio, assignors to The Standard Oil Co., Cleveland, Ohio

Filed Dec. 28, 1979, Ser. No. 108,327
Int. Cl.³ C07C *120/14, 120/00*
U.S. Cl. 260—465.3 **5 Claims**

1. In an ammoxidation process for producing acrylonitrile or methacrylonitrile in which a reactant selected from the group consisting of propylene and isobutylene together with oxygen and ammonia in the vapor phase are contacted with a catalyst at elevated temperature, the improvement wherein said catalyst is a copper-free antimony phosphate oxide complex, at least 80% of said oxide complex exhibiting the antimony phosphate layer structure, the Sb/P ratio of said oxide complex being between 0.8/1 and 1/0.8, substantially all of the antimony in said oxide complex being in the trivalent state, said oxide complex having the formula:

$$A_aB_bSb_cMo_dTe_mBi_nP_pO_x$$

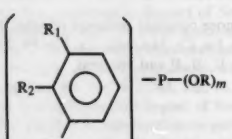
wherein
A is one or more elements selected from the group of alkali metals, alkaline earth metals and thallium;
B is one or more elements selected from the group of Fe, Co, Ni, Mn, Cr, Zn, Cd and B; and
wherein
a is 0–1;
b is 0–1;
c is 8–10;
d is 0.1–2;
p is 7.0–9.9;
m is >0–1;
n is 0–1;
(m+n)>0;
d/m is 1–20;
d+m is 0.2–1.0; and
x is a number which satisfies the valence requirements of the other elements present.

4,316,857
DIMERIZATION PROCESS

Arthur H. Gilbert, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Oct. 18, 1979, Ser. No. 86,035
Claims priority, application United Kingdom, Oct. 26, 1978, 41989/78
Int. Cl.³ C07C *120/00, 121/20*
U.S. Cl. 260—465.8 D **12 Claims**

1. In a process for the dimerisation of acrylonitrile to dicyanobutene which comprises contacting the acrylonitrile at a reaction temperature of 0° to 120° C. in the substantial absence of water and phenolic acrylonitrile stabilisers with a phosphinite or phosphinite of general formula:



where R_2 is an electron-donating substituent, R_1 and R_3 are electron-donating substituents or hydrogen atoms, provided that they are not both hydrogen atoms, or either R_1 or R_3 forms part of a fused alicyclic ring with R_2, R is either alkyl or cycloalkyl and n and m are intergers, each being 1 or 2, provided that (m+n) equals 3, and when n is 2, the substituents on each aromatic ring may be the same or different, the acrylonitrile being present in solution in a mixed solvent comprising an inert organic solvent which is capable of donating protons and an inert hydrocarbon co-solvent, the improvement whereby the inert hydrocarbon co-solvent is a mixture of a first hydrocarbon selected from the group consisting of benzene and alkylbenzenes boiling in the range between about 75° to 150° C. and a second hydrocarbon boiling in the range between about 30° to 150° C. selected from the group consisting of alkanes and cycloalkanes, so that the dicyanobutene product of the process separates from the solvent mixture or is separated therefrom by liquid/liquid extraction, the phosphinite or phosphonite catalyst remaining in the solvent mixture.

4,316,858
PREPARATION OF ARYLPHOSPHINIC ACIDS

Kirk A. Simmons, Scarsdale, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Mar. 27, 1981, Ser. No. 248,102
Int. Cl.³ C07F *9/28*
U.S. Cl. 260—502.4 R **11 Claims**

1. A process for the preparation of an aryl-phosphinic acid comprising reacting an aryl compound susceptible to electrophilic ring substitution with phosphorus trichloride in the presence of aluminum chloride to form a first reaction product, adding said first reaction product to water to precipitate a second reaction product, dissolving said second reaction product in an alkali metal hydroxide solution, treating said alkali metal hydroxide solution with carbon dioxide to precipitate aluminum hydroxide, removing said aluminum hydroxide and acidifying the remaining solution to form said arylphosphinic acid product.

4,316,859
PREPARATION OF ARYLPHOSPHINIC ACIDS

James M. Photis, Ridgefield, Conn., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Mar. 27, 1981, Ser. No. 248,103
Int. Cl.³ C07F *9/28*
U.S. Cl. 260—502.4 R **8 Claims**

1. A process for the preparation of arylphosphinic acids comprising reacting an aryl compound susceptible to electrophilic ring substitution with phosphorus trichloride in the presence of aluminum chloride to form a first reaction product, adding said first reaction product to water to precipitate a second reaction product, recovering said precipitate and sequentially treating it with a halogenating agent and with water to form an arylphosphinic acid.

4,316,860
PHOSPHONIUM COMPOUNDS, A PROCESS FOR THEIR PREPARATION AND A PROCESS FOR THE PREPARATION OF ASYMMETRICALLY SUBSTITUTED STILBENE FLUORESCENT BRIGHTENING AGENTS

Michael Märky, Binningen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 950,902, Oct. 12, 1978, Pat. No. 4,231,957. This application May 15, 1980, Ser. No. 150,026
Claims priority, application Luxembourg, Nov. 4, 1977, 78449
Int. Cl.³ C07C *145/00, 143/38, 63/36*
U.S. Cl. 260—513.7 **4 Claims**

1. A phosphonium compound of the formula

$$(R)_3P^{\oplus}—CH_2—X—CH=CH—R_1—Y^{\ominus}$$

in which
R is alkyl of 1 to 6 C atoms, cycloalkyl of 5 to 7 C atoms or phenyl;
R_1 is a mononuclear or binuclear aromatic carbocyclic or heterocyclic group selected from the group consisting of

phenyl, naphthyl, furan, thiophene, oxazole, isoxazole, pyrazole, imidazole, triazole and oxadiazole, which group, in addition to the substituent $Y^{\ominus}$, is unsubstituted or substituted by one or two substituents selected from the group consisting of chlorine, bromine, fluorine, C_1–C_8 alkyl, C_3–C_7 alkenyl, C_5–C_7 cycloalkyl, C_1–C_8 alkoxy, C_2–C_{12} alkoxyalkoxy, phenoxy, phenyl, cyano, carboxyl, C_2–C_5 carbalkoxy and sulfo, and which group can contain a fused benzo or naphtho moiety;

X is phenylene, 4,4'-biphenylene or 1,4 or 2,6-naphthylene; and

$Y^{\ominus}$ is $SO_3^{\ominus}$, $SO_2^{\ominus}$ or $COO^{\ominus}$, with the proviso that $Y^{\ominus}$ is not $SO_3^{\ominus}$ when R_1 is phenyl.

4,316,861
N-NITROARYL-N-HALOSULFONYL UREAS

Otto Arndt, and Wolfgang Tronich, both of Hofheim am Taunus, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

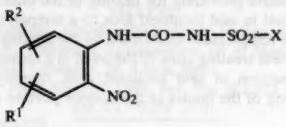
Filed Dec. 20, 1979, Ser. No. 105,560

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1978, 2855884

Int. Cl.³ C07C *143/70*

U.S. Cl. 260—543 F **4 Claims**

1. A compound of the formula



wherein X is fluorine or chlorine, R^1 is hydrogen or nitro, and R^2 is hydrogen, fluorine, chlorine, bromine, lower alkyl, lower alkoxy, trifluoromethyl, cyano, phenyl or a benzene ring fused to the substituted benzene ring.

4,316,862
PROCESS FOR THE PREPARATION OF SULPHONIC ACID CHLORIDES

Wolfgang Schenk, Leverkusen; Heinz U. Blank, Odenthal; Ferdinand Hagedorn, Leverkusen, and Werner Evertz, Monheim, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

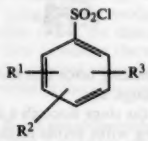
Continuation of Ser. No. 944,458, Sep. 21, 1978, abandoned. This application Apr. 21, 1980, Ser. No. 141,861

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1977, 2743540

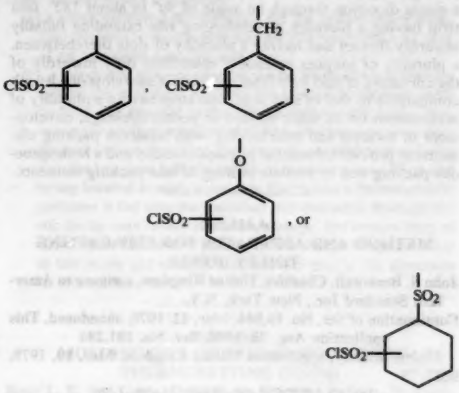
Int. Cl.³ C07C *143/26*

U.S. Cl. 260—543 R **16 Claims**

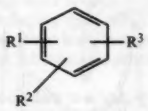
1. In a process for the preparation of a sulphonic acid chloride of the formula



wherein R^1, R^2 and R^3 are identical or different and denote hydrogen, a lower alkyl radical or a cycloalkyl radical, halogen, aryl, aralkyl, aryl ether or a radical $-SO_2Cl$, $-SO_2$aryl,



or wherein adjacent radicals R^1 and R^2 are linked to form a cycloaliphatic, aromatic or hetero-aromatic ring which is optionally substituted by a sulphonic acid chloride group which consists essentially of contacting an aromatic compound of the formula



wherein R^1, R^2 and R^3 have the above-described meaning with chlorosulphonic acid and thionyl chloride, the improvement which consists essentially of contacting said aromatic compound with chlorosulphonic acid which acid is present in an excess up to 20 weight percent, relative to each sulphonic acid chloride group to be introduced on the aromatic ring, the chlorosulphonic acid being introduced initially into a reaction vessel and the aromatic compound being added thereto depending upon the rate of reaction whereby the reaction product contains aromatic sulphonic acid, unreacted chlorosulphonic acid, sulfuric acid, a diphenylsulfone, hydrogen chloride and unreacted aromatic compound and thereafter contacting said reaction product with excess thionyl chloride.

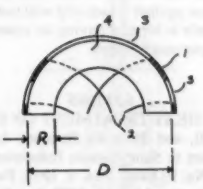
4,316,863
TOWER PACKING ELEMENTS

Max Leva, 5600 Munhall Rd., Pittsburgh, Pa. 15217

Filed Nov. 10, 1980, Ser. No. 205,661

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—98 **15 Claims**



1. In a packing for a vapor or gas-liquid contact tower and the like, a plurality of randomly packed mutually interlocking

packing elements providing a bed, each packing element comprising an open ended curved strip exhibiting curvature only in a single direction through an angle of 90° to about 180°, said strip having a plurality of reinforcing ribs extending radially inwardly thereof and having a plurality of slots therebetween, a plurality of tongues extending essentially only inwardly of the curvature of said strip from the ends of said slots of a length comparable to that of said slots, said strip having a plurality of perforations on its outer surface to permit drainage, development of rivulets and interlocking with adjacent packing elements to provide substantial physical stability and a homogeneous packing and to prevent nesting of said packing elements.

4,316,864

METHOD AND APPARATUS FOR SLIP CASTING TOILET BOWLS

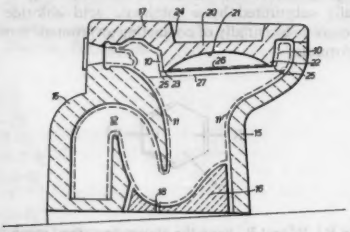
John S. Bramwell, Cheshire, United Kingdom, assignor to American Standard Inc., New York, N.Y.

Continuation of Ser. No. 19,544, Mar. 12, 1979, abandoned. This application Aug. 25, 1980, Ser. No. 181,284

Claims priority, application United Kingdom, Mar. 10, 1978, 9687/78

Int. Cl.³ B29C *5/00*; B28B *21/08, 1/26*

U.S. Cl. 264—86 **12 Claims**



1. A mould for casting a toilet bowl of ceramic material in slip form, to mould the article in upright position said mould comprising:

a wall defining a casting energy in which an article to be cast is shaped;

said mould having an inlet through which slip is introduced into said casting cavity, air vent means through which air disposed in said casting cavity is displaced when the casting cavity is filled with slip and an outlet for draining excess slip from the mould;

said air vent means being disposed in the uppermost region of said casting cavity;

an unvented compartment means for housing a volume of air therein;

said compartment means being defined by a wall which is impermeable to air and which is upwardly closed and downwardly in open communication with the casting cavity in a position such as to correspond to an opening in said bowl;

said open end of the compartment means being positioned below the air vent means so that said volume of air provides a surface against which slip will not adhere whereby said cast article is formed having an opening in the region of said compartment means.

4,316,865

METHOD FOR HEAT TREATMENT OF FIBROUS MATS

Jean A. Battigelli, and Francois Bouquet, both of Rantigny, France, assignors to Saint-Gobain Industries, Cedex, France

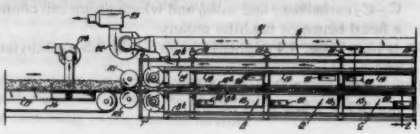
Division of Ser. No. 912,482, Jun. 6, 1978, Pat. No. 4,263,007. This application May 18, 1979, Ser. No. 40,135

Int. Cl.³ B29J *5/00*

U.S. Cl. 264—109 **8 Claims**

1. A method for heat treating a moving fibrous mat carrying a heat hardenable fiber binder in order to effect hardening of the binder and binding of the fibers to produce a mat having substantially uniform binding throughout the thickness thereof, comprising:

(a) feeding the fibrous mat in a feed path through a heat treating zone of an oven having an entrance and an exit and in which the mat is heated to a temperature having a hardening effect on said binder, and



(b) passing a heated gas through the mat in a localized area smaller than said zone of the oven and extended across the mat in said zone, said heated gas being at a temperature and pressure providing for heating of the interior portion of the mat in said localized area to a temperature higher than the temperature established by the heating of the mat in said heat treating zone of the oven in a region adjoining and upstream of said localized area, thereby effecting hardening of the binder in the interior portion of the mat.

4,316,866

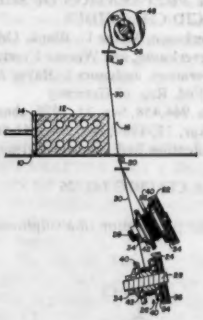
PROCESS AND APPARATUS INVOLVING A CUTTING WIRE SPOOLING SYSTEM FOR CUTTING BRICK AND TILE

Albert R. Martin, Snyder, Tex., assignor to R. Martin & Associates, Snyder, Tex.

Filed Sep. 26, 1980, Ser. No. 191,247

Int. Cl.³ B28B *11/14*

U.S. Cl. 264—157 **16 Claims**



1. The process of making brick and tile including:

a. forming clay into slugs, and

b. cyclically pushing the slugs through a cutting frame having a plurality of cutting wires across it, thereby

c. cutting the slabs into units;

wherein the improved method comprises:

d. unrolling cutting wire from a supply roll on one side of the cutting frame across the cutting frame, and

e. winding the wire onto a take up roll on the other side of the

cutting frame from the supply roll during a time when a slug is not being pushed.

4,316,867

PROCESS FOR REMOVING IMPURITIES FROM POLYMER SOLUTIONS

James W. Henry, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 10, 1979, Ser. No. 83,485
Int. Cl.³ D01D 1/10
U.S. Cl. 264—169 5 Claims

1. In a continuous process wherein cellulose ester solution is introduced into a spinnerette for producing a filament therefrom, the improvement which comprises

(a) introducing a volatile viscosity reducing agent into said solution to render the solution suitable for centrifuging,

(b) passing said solution of reduced viscosity through a centrifuge wherein gels are centrifugally separated from the solution,

(c) evaporating volatile viscosity reducing agent from said solution to render it suitable for spinning,

(d) condensing the viscosity reducing agent and capturing the heat of condensation, and

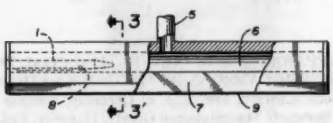
(e) using the heat from step (d) as at least a part of the heat required for evaporating the viscosity reducing agent.

4,316,868

EXTRUDING COLORED THERMOPLASTIC RESIN SHEETS

Robert A. Esposito, Granby; Frederick F. Valego, Jr., Monson, and John C. Hoagland, Longmeadow, all of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 17, 1980, Ser. No. 207,323
Int. Cl.³ B29F 3/10
U.S. Cl. 264—171 12 Claims



1. A process for the extrusion of a pellucid sheet of a thermoplastic polymer with a gradient color band incorporated therein which comprises:

(a) providing a sheet extrusion die having a slit die orifice and a manifold adapted to feed a polymer melt to said orifice by way of an extrusion passage;

(b) providing a generally torpedo-shaped probe located eccentrically within the manifold and adjacent the extrusion passage with the axis of the probe parallel to the slit die orifice, said probe having in the surface adjacent the extrusion passage, a wedge-shaped extrusion orifice that extends parallel to the probe axis for less than half of the width of the extrusion passage and being located in such a position that, when a main flow of a thermoplastic polymer is fed into the manifold and extruded through the slit die by way of the extrusion passage, the stream lines of the main flow as it passes by the wedge-shaped orifice are substantially parallel and in the direction of extrusion;

(c) feeding a main flow of molten thermoplastic polymer to the manifold and a colored secondary flow of the same polymer, at substantially the same temperature and viscosity, to the probe;

(d) extruding both flows simultaneously such that a layer of colored polymer that is constant in width but tapering in thickness at one extremity of its width, is completely encapsulated in the main flow of molten polymer; and

(e) extruding the combined flows through the slit die to produce a sheet with an encapsulated gradient color band.

8. An apparatus for the production of a pellucid sheet of a thermoplastic polymer with a gradient color band encapsulated therein which comprises:

(a) a sheet extrusion die having a slit die orifice and a manifold adapted to feed a polymer melt to said orifice by way of an extrusion passage; and

(b) a generally torpedo-shaped probe located eccentrically within the manifold adjacent the extrusion passage, with its long axis parallel to the slit die orifice, said probe having in the surface adjacent the extrusion passage, a wedge-shaped extrusion orifice that extends parallel to the probe axis for less than half the width of the extrusion orifice and being located in such a position that when a thermoplastic polymer is fed into the manifold and extruded through the slit die by way of the extrusion passage, the stream lines of the polymer flow as it passes by the wedge-shaped orifice in the probe are substantially parallel and in the direction of extrusion.

4,316,869

MOLDING OF LAYERED OBJECTS FROM THERMOSETTING RESINS

René L. E. Van Gasse, Opglabbeek, Belgium, assignor to Stamicarbon, B.V., Geleen, Netherlands

Filed Apr. 24, 1980, Ser. No. 144,648
Claims priority, application Netherlands, May 2, 1979, 7903428
Int. Cl.³ B29D 9/00
U.S. Cl. 264—255 7 Claims

1. A process for manufacturing objects having a cover layer and an underlying basic layer bonded thereto, each layer being formed from a thermosetting resin, using only a shape-imparting support face to which at least said cover layer of thermosetting resin is applied, wherein said process employs the combination of steps of:

a. heating said support face to a temperature between 90° C. and 200° C.;

b. forming a cover layer by applying a first thermosetting resin as liquid or solid fine particles along with a catalyst to said support face, and causing any solid resin to melt and effecting polymerization and curing of said first resin; and

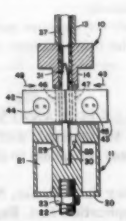
c. forming a basic layer by applying a second cross-linking thermosetting resin to said formed cover layer and then curing said second resin while maintaining a support face temperature below 90° C. whereby said second resin forms said basic layer bonded to said cover layer.

4,316,870

PLASTIC TUBE, COUPLING, AND METHOD OF FORMING SAME

William W. Rowley, 12117 Bradford, Chardon, Ohio 44024

Division of Ser. No. 912,743, Jun. 5, 1978, abandoned. This application Jun. 9, 1980, Ser. No. 157,395
Int. Cl.³ B29C 24/00
U.S. Cl. 264—296 12 Claims



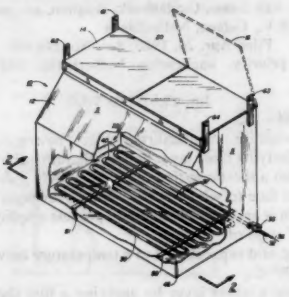
1. A method of integrally forming an end cap having a sealing surface on a plastic tube comprising the steps of placing the end of the tube to be formed partially on an elongated male

die projection of a male die with the projection closely conforming to the I.D. of the tube, such male die including a cup-shape recess from which the male die projection projects axially and concentrically, surrounding the O.D. of the tube with a female die which also includes a recess adapted to cooperate with the recess of such male die, holding such dies separated with the tube end to be formed projecting from the female die and placed at least partially on said male die projection, then heating the portion of the tube projecting from the female die sufficiently to make such projecting portion pliable enough to form, and then by moving the dies together, forming the heated portion of the tube into the configuration of the cooperating recesses.

4,316,871
REFUSE DISINFECTION DEVICE

Emanuel G. De Fraites, 535 Iris Ave., New Orleans, La. 70121

Filed Aug. 7, 1980, Ser. No. 175,846
Int. Cl.³ A61L *2/06*
U.S. Cl. 422—26 **2 Claims**



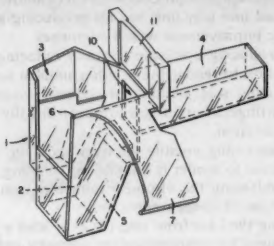
1. A method of disinfecting refuse products comprising:
a. placement of refuse products into a container having an inner space and an upper opening for adding said refuse products to the inner space portion of said container, and an elongated steam coil sparger mounted in said container at the bottom portion thereof;
b. closing a movable door portion for containing said refuse products in said container in a sealing fashion;
c. injecting water into the said container to a level to cover the said elongated steam coil sparger;
d. injecting steam into said elongated steam coil sparger;
e. allowing said steam to flow out of said sparger through a plurality of equally spaced steam discharging openings provided in said sparger on the lower portion thereof, each of said openings facing downwardly, at least in part, and located alternately left and right of the line of the pipe sections;
f. steaming the refuse products for a time sufficient to allow disinfection to occur;
g. providing a pair of support members for spacing said sparger above the floor portion of said container.

4,316,872
RING OF CELLS FOR ANALYTICAL DEVICES

Juerg Rahm, Basel, Switzerland, and Peter Schulz, Pfreimd, Fed. Rep. of Germany, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed May 5, 1980, Ser. No. 146,987
Claims priority, application Fed. Rep. of Germany, May 10, 1979, 2913501; May 10, 1979, 2918800
Int. Cl.³ G01N *35/00*
U.S. Cl. 422—102 **15 Claims**

1. A cell for a ring of cells of an analytical device operating on the centrifugal principle utilizing a reagent for measuring a sample, said cell comprising:
(a) a sample chamber configured and disposed to receive and retain the sample until centrifugal force is applied to the cell;
(b) a reagent chamber configured and disposed to receive and retain the reagent until centrifugal force is applied to the cell;
(c) a measuring chamber having an opening communicating the sample chamber and reagent chamber therewith, said measuring chamber configured and disposed to receive

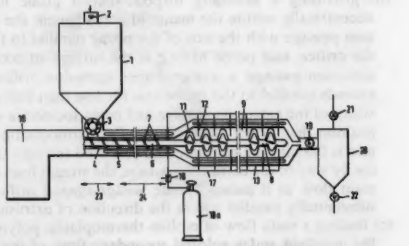


and retain the sample and reagent while centrifugal force is applied to the cell;
(d) tongue means integral with the cell, positioned and configured to project from the cell and at least partially overlap a portion of an adjacent cell, said tongue means being secured to said adjacent cell so as to form a rigid connection between said adjacent cells; and
(e) an integral web member positioned above the measuring chamber and configured and dimensioned so as to retain the reagent and sample within the cell while centrifugal force is applied to the cell.

4,316,873
APPARATUS FOR CONVERTING COAL TO HYDROCARBONS BY HYDROGENATION

Klaus Koch, Laatzen, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hanover, Fed. Rep. of Germany

Filed May 21, 1980, Ser. No. 151,827
Claims priority, application Fed. Rep. of Germany, Oct. 27, 1979, 2943537
Int. Cl.³ B01F *7/08*
U.S. Cl. 422—112 **17 Claims**



1. Apparatus for converting coal to hydrocarbons by the use of hydrogen, comprising:
(a) a pressure-sealed volume-controlled feed hopper for the coal;
(b) a feed and preparation chamber defined by a cylinder and communicating in a controlled manner with said feed hopper,
(c) a rotatable friction element mounted in said feed and

preparation chamber and functioning to convey, compress and shear the coal thereby generating frictional heat, pressure and agglomeration of the coal, with the coal in such feed and preparation chamber being transformed into a plastic state prior to leaving said feed and preparation chamber,

(d) a substantially cylindrical hydrogenation chamber downstream of and in flow communication with said feed and preparation chamber for receiving the plasticized coal,

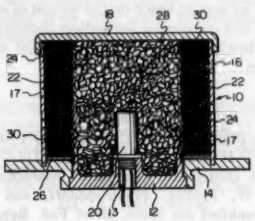
(e) rotor means mounted for rotation in said hydrogenation chamber, said plasticized coal being subjected to intensive mixing and shearing action by said rotor means, and

(f) means for injecting hydrogen under high pressure into said hydrogenation chamber, as a result of which the hydrogen and plasticized coal are intensively distributed and dispersed through the hydrogenation chamber, thereby effecting intensive and rapid hydrogenation.

4,316,874
GAS GENERATOR UTILIZING GRANULAR SILICON CARBIDE AS COOLANT

Tsuneo Kasama; Hikaru Fujiyama, both of Kawagoe; Tadahiko Nagaoka, Sayama, and Masayoshi Katoh, Kawagoe, all of Japan, assignors to Nissan Motor Co., Ltd. and Nippon Oil & Fats Co., Ltd., both of, Japan

Continuation of Ser. No. 43,118, May 29, 1979, abandoned. This application Sep. 2, 1980, Ser. No. 183,585
Claims priority, application Japan, May 29, 1978, 53-63364
Int. Cl.[3] A62B *7/08;* **B01J** *19/00*
U.S. Cl. 422—126 **4 Claims**



1. A gas generator of use for inflating gas bags, comprising:

a housing having a wall formed with a plurality of gas discharge apertures;

a first metal partition arranged in said housing at a distance from said wall so as to define a reaction chamber which is spaced from said wall in the interior of said housing;

a second metal partition arranged in said housing along the inside of said wall such that a cooling chamber is defined between said first and second partitions;

a plurality of pellets of a solid gas-generating composition which undergoes an exothermic and self-sustaining reaction when ignited with generation of a heated reaction gas confined in said reaction chamber;

an electrically initiatable ignition device attached to said housing so as to be able to ignite said pellets; and

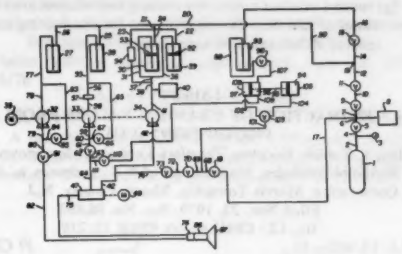
granules of α SiC confined in said cooling chamber to absorb heat from said reaction gas during passage of said reaction gas through said cooling chamber, at least a major amount of said granules individually having sharp-edged shapes;

each of said first and second metal partitions being a wire screen so that said reaction gas is allowed to pass therethrough, the ratio of the particle size of each of said granules of α SiC to the size of each opening of said wire screen being in the range from 4.0 to 3.4, said granules having a size such that they pass through a 12-mesh screen and are retained on a 14-mesh screen.

4,316,875
APPARATUS FOR PRODUCING A CURABLE POLYURETHANE FROTH

Bruce P. Barth, Bridgewater; Robert N. Johnson, Basking Ridge; Walter P. Mayer, Lebanon, all of N.J., and Bruce H. W. Pinkston, Cleveland, Ohio, assignors to Union Carbide Corporation, New York, N.Y.

Filed Jan. 28, 1980, Ser. No. 115,628
Int. Cl.[3] B29D *27/00;* **C08J** *9/00*
U.S. Cl. 422—133 **3 Claims**

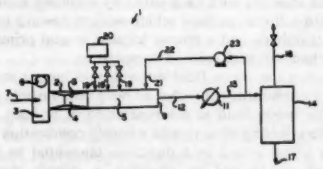


1. An apparatus for the continuous production of a curable polyurethane froth which apparatus comprises separate sources of a polyol, an isocyanate, a catalyst and an inert gas, said sources being vessels and/or tanks, means including separate conduits for feeding said polyol, isocyanate and inert gas separately and under pressure at controlled flow rates from said sources to a first mixing device containing inlet openings to receive said polyol, isocyanate and inert gas, means for mixing said polyol, isocyanate, and inert gas to produce a froth and an outlet opening for the resulting froth, means for delivering the froth from said first mixing device to an injector means, a conduit for feeding the catalyst under pressure at a controlled flow rate to the injector means, means for injecting the catalyst into the froth, said injector means containing inlet openings to receive the froth and catalyst and an outlet opening for the resulting catalyzed froth, a conduit for delivering the catalyzed froth from the injector means to a second mixing device, means for mixing the catalyzed froth to a uniform homogeneous state, said mixing device containing an inlet opening to receive the catalyzed froth and an outlet opening for the resulting homogenized froth and means for delivering the catalyzed froth from the second mixing device onto a substrate.

4,316,876
APPARATUS FOR PRODUCING CARBON BLACK

King L. Mills, and Paul H. Johnson, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 746,963, Dec. 2, 1976, Pat. No. 4,265,870. This application Feb. 5, 1981, Ser. No. 231,840
Int. Cl.[3] C01B *49/00*
U.S. Cl. 422—151 **4 Claims**



1. An apparatus for producing carbon black including:

(a) a reactor forming a precombustion zone, a reaction zone downstream of the precombustion zone and a quench

zone downstream of the reaction zone, said reactor having an outlet;
(b) a heat exchange means;
(c) first conduit means connecting said heat exchange means to said reactor outlet for flow of reactor effluent from said reactor to said heat exchange means;
(d) a first inlet opening into said quench zone;
(e) a source of liquid coolant operably connected to said first inlet;
(f) a second inlet opening into said quench zone downstream of said first inlet;
(g) second conduit means connecting said second inlet to an outlet of said heat exchange means for conducting cooled reactor effluent to said second inlet.

4,316,877

EXTRACTION OF URANIUM VALUES FROM PHOSPHORIC ACID

Allen A. Tunick, Boonton; Theodore Largman, Morristown, and Stylianos Sifniades, Madison, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Nov. 23, 1979, Ser. No. 96,853
Int. Cl.³ C01G *43/00*; C01B *25/238*
U.S. Cl. 423—10 **27 Claims**

1. A process of recovering uranium values from an aqueous phosphoric acid solution by extracting the uranium values from the aqueous phosphoric acid solution with an organic solution containing an organophosphorus extractant and stripping the uranium values from the organic solution wherein the improvement comprises:
(a) contacting the aqueous phosphoric acid solution with an organic solution of a mixture of organophosphorus compounds containing a 1-hydroxy-1,1-alkanediphosphonic acid of 8–18 carbons in a hydrocarbon solvent and a substantially water-insoluble cosolvent at a temperature between about 50° C. and about 70° C. to extract uranium values into the organic solution,
(b) contacting the organic solution containing uranium values with an aqueous hydrogen fluoride solution of between about 30 and about 70 weight percent hydrogen fluoride, and
(c) recovering the uranium values as a precipitate.

4,316,878

METHOD FOR THE COMBUSTIVE TREATMENT OF WASTE FLUIDS CONTAINING NITROGEN COMPOUNDS

Mikio Akune, Yokosuka, and Yoshiaki Kinoshita, Hino, both of Japan, assignors to Nittetu Chemical Engineering Ltd., Tokyo, Japan

Filed Feb. 1, 1980, Ser. No. 117,507
Claims priority, application Japan, Feb. 8, 1979, 54-12787
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—235 **13 Claims**

1. A method for treating a waste fluid containing a nitrogen compound by combustion in an incinerator having cylindrical, coaxially aligned primary and secondary combustion chambers connected in series with each other by a joining member provided with a throat portion which widens toward both combustion chambers, and a burner located in said primary combustion chamber, said method comprising:
(a) feeding the waste fluid through said burner to said primary combustion chamber to burn combustible materials in the waste fluid at a temperature of at least 1200° C. while injecting air into said primary combustion chamber at a velocity and in a direction tangential to the inner periphery thereof to establish a vortex therewithin, whereby a whirling combustion gas containing nitrogen oxides is formed;
(b) causing said combustion gas in said primary combustion chamber to pass through said throat portion while injecting thereinto a fluid containing a compound having a nitrogen-hydrogen bond for mixing with said combustion gas;
(c) introducing said mixture from said throat into said secondary combustion chamber in a diverging pattern thereby producing a pressure drop in the center of said secondary combustion chamber whereby gases in the vicinity of the outlet of the secondary combustion chamber will reverse flow back toward said throat to minimize local variations in temperature and concentration;
(d) burning said combustible materials in said mixture in said secondary combustible chamber at a temperature of between 850° and 1150° C;
(e) controlling the amount of air injected into said incinerator so that the residual oxygen content in the resulting waste combustion gas discharged from said secondary combustion chamber does not exceed 5% by volume; and
(f) discharging said waste combustion gas from said secondary combustion chamber.

4,316,879

STABILIZED SODIUM CARBONATE PEROXIDE PREPARATION METHOD

Michael L. Pinsky, Mount Holly; Joseph H. Finley, Metuchen, and Charles W. Lutz, Princeton, all of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Jun. 17, 1977, Ser. No. 807,698
Int. Cl.³ C01B *15/10*
U.S. Cl. 423—265 **5 Claims**

1. A method for the preparation of stabilized sodium carbonate peroxide which comprises incorporating polyethylene glycol having an average molecular weight of about 200 to 50,000 into sodium carbonate peroxide, in an amount equal to 0.01% to 5% by weight based on the weight of sodium carbonate peroxide, and recovering the sodium carbonate peroxide as a dry, free-flowing solid, thereby stabilized against loss of active oxygen.

4,316,880

PROCESS FOR PRODUCING CARBON MONOXIDE AND HYDROGEN FROM METHANOL

Heinz Jockel, Büttelborn; Friedemann Marschner, Oberursel; Friedrich W. Möller, Friedrichsdorf, and Hans-Günter Mörtel, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Metallgesellschaft, Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed May 6, 1980, Ser. No. 147,040
Claims priority, application Fed. Rep. of Germany, May 8, 1979, 2918405
Int. Cl.³ C01B *31/18, 1/13*
U.S. Cl. 423—415 A **3 Claims**

1. A process for producing carbon monoxide and hydrogen which comprises contacting methanol vapor containing water vapor in an amount of 2 to 10 percent by weight at a temperature of 200° to 300° C. and a pressure in the range of 2 to 50 bars with an indirectly heated catalyst comprising 20 to 50 atomic percent zinc, 40 to 60 atomic percent copper, and 10 to 20 atomic percent vanadium, whereby to obtain an effluent gas rich in carbon monoxide in which the components of carbon monoxide and hydrogen constitute at least 90% by volume of said gas, removing at least a part of the water vapor and carbon dioxide impurities from said effluent gas, and separating said effluent gas into its carbon monoxide and hydrogen components by adsorption by feeding said effluent gas under pressure of 2 to 10 bars to one of several zeolite type molecular sieve containing adsorbers where the zeolite is substantially permeable to hydrogen, said adsorption process comprising feeding said effluent to a first adsorber containing a zeolite type molecular sieve and withdrawing hydrogen from said adsorber, continuing to charge said first adsorber beyond a breakthrough of carbon monoxide, withdrawing carbon monoxide-hydrogen from said frist adsorber and feeding it to a second adsorber, thereafter scavenging said first absorber by introducing virtu-

ally pure carbon monoxide t remove residual hydrogen from said first absorber, removing virtually pure carbon monoxide from said first absorber by pressure relieving said first adsorber whereby carbon monoxide is desorbed from the molecular sieve therein, renewing effluent gas supply to said first adsorber and while said first adsorber is being pressure relieved, feeding effluent gas to a second adsorber.

4,316,881

CARBON BLACK PROCESS UTILIZING AN IMPROVED BURNER

David F. Pobst, Jr., Big Spring, and Jesse M. Bailey, Jr., Odessa, both of Tex., assignors to Sid Richardson Carbon & Gasoline Co., Fort Worth, Tex.

Division of Ser. No. 913,833, Jun. 8, 1978, Pat. No. 4,250,145. This application Aug. 26, 1980, Ser. No. 181,638

Int. Cl.³ C01B *31/02*; C09C *1/48*

U.S. Cl. 423—456 1 Claim

1. The process for manufacturing carbon black comprising:

admixing a fluid fuel and oxidant gas in the burner section of a carbon black reactor;

directing said mixture of fluid fuel and oxidant gas through a flame holder having a plurality of elongated parallel orifices;

combusting said mixture to form a stream of hot combustion product gases;

directing a hydrocarbon feedstock into said hot combustion product gases;

flowing said mixture of hydrocarbon feedstock and hot combustion product gases downstream in said reactor to form carbon black; and

quenching said flowing hydrocarbon feedstock and combustion product gases with water to terminate the carbon black forming reaction.

4,316,882

COMPOSITIONS FOR TESTING TO PREDICT AND/OR DIAGNOSE ALLERGY TO PENICILLINS

Bernard B. Levine, 210 Riverside Dr., New York, N.Y. 10025

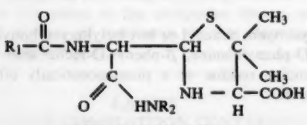
Continuation-in-part of Ser. No. 898,044, Apr. 20, 1978, Pat. No. 4,183,910. This application Aug. 30, 1979, Ser. No. 71,418

Int. Cl.³ A61K *49/00*

U.S. Cl. 424—9 3 Claims

1. A storage-stable composition capable of being reconstituted by mixture with a suitable solvent to form a composition useful in skin testing for penicillin allergy or hypersensitivity to penicillins, including benzyl penicillin and semisynthetic penicillins, comprising an amount effective for detecting penicillin allergy or hypersensitivity of a lyophilized mixture of

(1) a compound represented by the formula:



wherein:

R_1 is a side chain contained in the penicillins from which the penicilloyl amine or aminoacid compound is prepared; said penicillins being selected from the group consisting of benzylpenicillin and semi-synthetic penicillins, and

R_2 is a substituent selected from the group consisting of an alkyl group of C_2–C_6 chain length, a carboxy alkyl group of C_2–C_6 chain length, and a residue of an aminoacid or amine compound of the type present in the blood, blood plasma or tissue fluids, said compound being selected from the group consisting of cystamine, spermine, spermidine, phosphoethanolamine, arginine, cystine, glutamine, histidine, lysine, proline, serine, threonine, and asparagine,

said compounds being α-diastereoisomers or diastereoisomeric mixtures;

(2) benzylpenicillin; and

(3) sodium benzylpenicilloate.

4,316,883

RADIOACTIVE COMPOSITION

Marc de Schrijver, Rosenau, France, assignor to Solco Basel AG., Basel, Switzerland

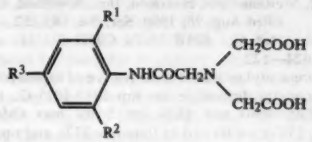
Continuation of Ser. No. 797,664, May 17, 1977, abandoned. This application Feb. 21, 1978, Ser. No. 883,421

Claims priority, application Switzerland, May 31, 1976, 6793/76

Int. Cl.³ A61K *49/00, 43/00*

U.S. Cl. 424—1 9 Claims

1. A radioactive composition for the scintigraphic imaging of the hepatobiliary system, the composition comprising a complex of ^{99m}Tc with a dicarboxylic acid of the formula:



in which R^1 and R^2 are each an ethyl or an isopropyl group, and R^3 is hydrogen, or each of R^1, R^2 and R^3 are a methyl group, or one of its water-soluble salts, in sterile, aqueous solution.

4,316,884

SUSTAINED RELEASE PHARMACEUTICAL FORMULATION

Abu S. Alam, Westerville, and Herman J. Eichel, Columbus, both of Ohio, assignors to Adria Laboratories, Inc., Columbus, Ohio

Continuation-in-part of Ser. No. 6,971, Jan. 25, 1979, abandoned. This application Jun. 19, 1980, Ser. No. 160,887

Int. Cl.³ A61K *9/50*

U.S. Cl. 424—19 11 Claims

1. In the method of administering the anti-inflammatory and analgesic drug indoprofen gastro-intestinally not only in order to obtain an analgesic effect at a dose in the order of 100 to 600 mg. per day, within which dosage regimen indoprofen exhibits its maximum analgesic effect and has minimal or negligible side effects, but also to exert an anti-inflammatory activity at a dose in the order of 800 mg. per day, within which it is effective in the treatment of osteoarthritis with minimal gastrointestinal ulceration and other side effects, up to 1200 mg. per day, wherein indoprofen is effective in the treatment of rheumatoid arthritis but with recognized incidence of gastro-intestinal ulceration and other side effects, and wherein clinical studies show that as the indoprofen dose is increased, the plasma peak height and the bioavailability, as measured by total area under the plasma curve increases in a linear fashion, and wherein study in mice shows indoprofen given as the pure drug and in microencapsulated form have equivalent bioavailablity, the improvement wherein the action of indoprofen can be prolonged up to about eight-fold if it is microencapsulated and can even be further prolonged by compressing the micro-capsules into tablets, comprising administering a microencapsulate formulation for indoprofen which can be used safely at its effective anti-inflammatory dose for the treatment of both osteoarthritis and rheumatoid arthritis in humans, and wherein the release of indoprofen in the gastro-intestinal tract can be controlled, thereby preventing localized high concentrations, said composition comprising tablets of microencapsulated indo-

profen prepared by (1) heating a dispersion of microparticles below 20 microns of indoprofen in a liquid mixture with a cellulose ether, said liquid mixture comprising a major part by volume of a low-viscosity liquid which is a solvent for the cellulose ether and a minor part by volume of a polymer which is incompatible with the cellulose ether, said cellulose ether being soluble in the low-viscosity liquid part of the liquid mixture when the mixture is heated to form a separate phase, said cellulose ether being present in such amount that the warm solution of it has a viscosity of 4,000 to 10,000 centipoises and may be broken up as tiny liquid droplets by agitation, said microparticles of indoprofen and cellulose ether comprising less than 30% by weight of the dispersion, (2) cooling the heated dispersion with agitation to a temperature at which the cellulose ether forms a solid protective coating of about 50 to 250 microns thickness on each microparticle of indprofen, (3) recovering the microencapsulated indoprofen and (4) compressing the microencapsulated indoprofen into tablets.

4,316,885

ACYL DERIVATIVES OF RAPAMYCIN

Sumanas Rakhit, Dollard des Ormeaux, Canada, assignor to Ayerst, McKenna and Harrison, Inc., Montreal, Canada

Filed Aug. 25, 1980, Ser. No. 181,252

Int. Cl.³ A61K *35/74*; C07D *491/14*

U.S. Cl. 424—122 **5 Claims**

1. A monacetyl or diacetyl derivative of rapamycin wherein the monoacetyl derivative has mp 101°–102° C.; ir ($CHCl_3$) 3400, 1730, 1640 and 1620 cm^{-1}; uv max (MeOH) 288 (ϵ=374), 277 (ϵ=494) and 267 nm (ϵ=372); and nmr ($CDCl_3$) δ2.05 (s, 3H) and 2.1 (s, 3H) and the diacetyl derivative has mp 92°–93° C.; ir ($CHCl_3$)3400, 1730, 1640 and 1620 cm^{-1}; uv max (MeOH) 288 (ϵ=366), 227 (ϵ=484) and 267 nm (ϵ=363); and nmr ($CDCl_3$) ϵ2.05 (s, 3H).

4,316,886

PROCESS FOR THE PREPARATION OF SOLID SODIUM AMOXYCILLIN

Charles B. Taskis, Worthing, England, assignor to Beecham Group Limited, England

Filed Sep. 6, 1979, Ser. No. 73,101

Claims priority, application United Kingdom, Dec. 8, 1978, 47744/78

Int. Cl.³ A61K *9/14, 31/43, 31/79*

U.S. Cl. 424—80 **14 Claims**

1. A process for the preparation of a solid sodium amoxycillin which process comprises removing the solvent from an aqueous solution of sodium amoxycillin containing from 2% to 20% w/v of the sodium amoxycillin and polyvinylpyrrolidone of molecular weight from 1000 to 12000.

4,316,887

COMPOSITION FOR TOPICAL APPLICATION AND METHOD FOR PREPARING THE SAME

Takuzo Kamishita, and Kazuhiko Kamishita, both of Takatsuki, Japan, assignors to Toko Yakuhin Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 956,620, Nov. 2, 1978, abandoned. This application Feb. 29, 1980, Ser. No. 125,894

Claims priority, application Japan, Nov. 7, 1977, 52/133217

Int. Cl.³ A61K *31/11, 31/74, 31/78, 31/045*

U.S. Cl. 424—81 **2 Claims**

1. A composition for topical application comprising a mixture of: (a) an aqueous solution of 20 to 60% by weight of an alcohol selected from the group consisting of ethanol, ethanol denatured with methanol, ethanol denatured with geraniol, said aqueous solution containing a therapeutically effective amount of an ingredient selected from menthol, camphor and a mixture of menthol and camphor; (b) a carboxyvinyl polymer in an amount of 0.1 to 1.5% by weight based on the weight of said composition; (c) a water-soluble basic substance selected from the group consisting of an alkylamine, a dialkylamine, a trialkylamine, an alkanolamine, a dialkanolamine, a trialkanolamine, trimethylolaminomethane, and ammonia in an amount effective for neutralizing the carboxyvinyl polymer; and (d) 0.002 to 1% by weight of sodium chloride based on the weight of said composition, said composition having a pH of 6.0 to 7.5 and a viscosity of 2,000 to 20,000 centipoises at 20° C.

4,316,888

METHOD AND COMPOSITION OF REDUCING PAIN

Eric L. Nelson, Santa Ana, Calif., assignor to Nelson Research & Development Co., Irvine, Calif.

Filed Apr. 15, 1980, Ser. No. 140,493

Int. Cl.³ A61K *33/00, 33/10, 33/08, 31/485*

U.S. Cl. 424—127 **10 Claims**

1. A method of temporarily reducing pain associated with gastrointestinal dysfunction in humans comprising administering to a human having pain associated with gastrointestinal dysfunction an effective, pain reducing amount of dextromethorphan or a pharmaceutically acceptable salt thereof.

4,316,889

NOVEL PEPTIDYL-ARGININE ALDEHYDE DERIVATIVES AND PROCESS FOR THE PREPARATION THEREOF

Sándor Bajusz; Erzsébet Szell neé Hasenöhrl; Éva Barabás, and Dániel Bagdy, all of Budapest, Hungary, assignors to Richter Gedeon Vegyészeti Gyár Rt., Budapest, Hungary

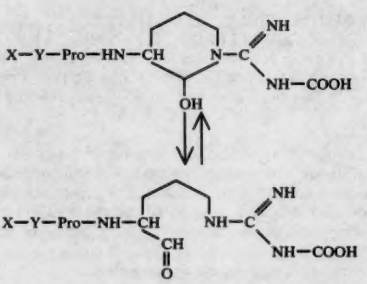
Filed Dec. 28, 1979, Ser. No. 108,224

Claims priority, application Hungary, Jan. 4, 1979, GO-1435

Int. Cl.³ A61K *37/00*; C07C *103/52*

U.S. Cl. 424—177 **4 Claims**

1. A peptidyl-arginine aldehyde derivative of the formula I or Ia



wherein

X is hydrogen, benzoyl or tert-butyloxycarbonyl, and

Y is D-phenylalanine, β-phenyl-D-lactic acid or D-allo-isoleucine residue or a pharmaceutically effective salt thereof.

4,316,890

PEPTIDES AND PROCESSES FOR THE MANUFACTURE THEREOF

Bruno Kamber, Arlesheim; Hans Rink, Riehen, and Peter Sieber, Reinach, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

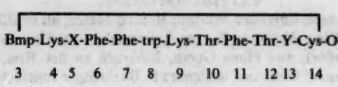
Filed Mar. 10, 1980, Ser. No. 129,066

Claims priority, application Switzerland, Mar. 16, 1979, 2506/79

Int. Cl.³ A61K *37/00*; C07C *103/52*

U.S. Cl. 424—177 **10 Claims**

1. A somatostatin-analogous peptide of the general formula



in which

Bmp represents the desaminocysteine radical,

X represents Asn or His,

trp represents D-Trp that may be substituted in the benzene ring by a halogen atom, and

Y represents the radical of an alph -(lower alkyl)amino-(lower alkyl)carboxylic acid having a minimum of 4 and a maximum of 8 carbon atoms or said radical in which the two lower alkyl radicals are connected to one another with a single C—C bond, an oxygen atom or a sulphur (II) atom, and a corresponding peptide amide, and also acid addition salts of said compounds.

4,316,891

EXTENDED N-TERMINAL SOMATOSTATIN

Roger C. L. Guillemin, La Jolla; Nicholas C. Ling, San Diego; Fred S. Esch, San Diego; Peter Bohlen, Encinitas, and Paul E. Brazeau, Jr., San Diego, all of Calif., assignors to The Salk Institute for Biological Studies, San Diego, Calif.

Filed Jun. 14, 1980, Ser. No. 159,801

Int. Cl.[3] A61K *37/00;* **C07C** *103/52*

U.S. Cl. 424—177 **6 Claims**

1. A pharmaceutical composition comprising synthetic somatostatin-28, synthetic somatostatin-25 or the nontoxic addition salts thereof, and a pharmaceutically acceptable liquid or solid carrier therefor.

4,316,892

2,6-C-DIMETHYLTYROSINE[1]-D-AMINO ACID[2]-ε-AMINO CAPROIC AND γ AMINOBUTYRIC ACID[5] DERIVATIVES OF METHIONINE ENKEPHALIN

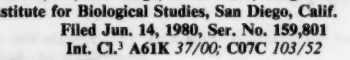
David A. Jones, Evanston, Ill., assignor to G. D. Searle & Co., Skokie, Ill.

Filed Nov. 3, 1980, Ser. No. 202,920

Int. Cl.[3] A61K *37/00;* **C07C** *103/52*

U.S. Cl. 424—177 **12 Claims**

1. An enkephalin derivative represented by the formula



wherein: X is methionine, alanine or nor-leucine; m is 3 or 5; and R is selected from the group consisting of hydrogen, lower alkyl or $—NR_2R_3$; wherein R_2 and R_3 are the same or different members of the group consisting of hydrogen and lower alkyl; wherein the (±) refers to the compound shown, its mirror image or a mixture of racemates; or the pharmaceutically acceptable salts thereof.

4,316,893

VEHICLE COMPOSITION CONTAINING 1-SUBSTITUTED AZACYCLOALKAN-2-ONES

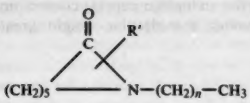
Vithal J. Rajadhyaksha, Mission Viejo, Calif., assignor to Nelson Research & Development Co., Irvine, Calif.

Division of Ser. No. 725,490, Oct. 28, 1978, abandoned, which is a continuation-in-part of Ser. No. 588,247, Jun. 19, 1975, Pat. No. 3,989,816. This application Apr. 4, 1980, Ser. No. 137,248

Int. Cl.[3] A61K *31/30, 31/70, 31/71, 31/505*

U.S. Cl. 424—180 **11 Claims**

1. A composition useful for topically administering a physiologically active agent to a human or animal comprising an effective amount of a physiologically active agent and a nontoxic, effective penetrating amount of a compound having the structural formula



wherein n is 0–11 and R' is H or a lower alkyl group having 1–4 carbon atoms.

4,316,894

ANTIBIOTIC SF-1130-X_3 SUBSTANCE AND PRODUCTION AND USE THEREOF

Shoji Omoto, Tokyo; Jiro Itoh, Yokohama; Tomizo Niwa, Yokohama; Takashi Shomura, Yokohama; Tetsutaro Niizato, Kawasaki, and Shigeharu Inouye, Yokohama, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

Filed Sep. 9, 1980, Ser. No. 185,592

Claims priority, application Japan, Sep. 19, 1979, 54-119324

Int. Cl.[3] A61K *35/00, 31/70, 31/71*

U.S. Cl. 424—116 **3 Claims**

1. The SF-1130-x_3 substance which is an oligosaccharide of weakly basic nature in the form of a colorless powder, which is soluble in water and dimethylsulfoxide, less soluble in methanol and ethanol but insoluble in acetone, ethyl acetate, chloroform and benzene and which shows positive reaction with silver nitrate-sodium hydroxide, red tetrazolium, anthrone and Greig-Leaback reagents, respectively; the SF-1130-x_3 substance being further characterized by:

(a) having a melting point of 183° C. (with decomposition) and a specific optical rotation $[\alpha]_D^{23}+154°$ (c 1, in water);

(b) exhibiting an elemental analysis: C 43.31%, H 5.88%, N 1.71% and O 49.10% (balance);

(c) having no characteristic absorption peak in ultraviolet spectrum (in water containing 100 μg/ml of a pure sample of the SF-1130-x_3 substance);

(d) having an infrared absorption spectrum pelleted in potassium bromide corresponding to that shown in FIG. 1 of the attached drawings;

(e) having a proton nuclear magnetic resonance absorption spectrum in deuterium oxide corresponding to that shown in FIG. 2 of the attached drawings;

(f) having a carbon nuclear magnetic resonance absorption spectrum in deuterium oxide corresponding to that shown in FIG. 3 of the attached drawings; and

(g) giving a single spot at $R_{raffinose}=0.64$ in a paper chromatography by the descending method developed with ethyl acetate-pyridine-water (10:4:3) as the developing solvent and at $R_{raffinose}=0.62$ in the same paper chromatography by the descending method developed with n-butanol-pyridine-acetic acid-water (6:4:1:3) as the developing solvent when the $R_{raffinose}$ values are calculated as assumed that raffinose gives a single spot at Rf=1.00 in the same paper chromatography.

4,316,895

ENDORPHINS HAVING PLACENTAL OR PANCREATIC ORIGIN

Charles D. Kimball, The Highlands, Seattle, Wash. 98177, and John C. Houch, 420 28th Pl., Seattle, Wash. 98199

Filed Jan. 3, 1980, Ser. No. 109,233

Int. Cl.[3] A61K *37/00;* **C07G** *7/00;* **C07C** *103/52;* **A61K** *37/02*

U.S. Cl. 424—177 **7 Claims**

1. An endorphin peptide composition comprising p-endorphin prepared from placental or defatted pancreatic tissue by extracting said tissue with dilute mineral acid, neutralizing the extract, incubating the neutalized extract at a temperature and for a time sufficient to denature proteolytic enzymes, and purifying the extract by treating it to exclude compounds that are too large to pass through a 5000 dalton hollow tube ultrafilter and chromatographing the portion of the extract that passes through the ultrafiler to separate the portion that cross-reacts

with beta endorphin antisera and has opiate receptor activity, thus obtaining the endorphin peptide composition comprising p-endorphin having a molecular weight greater than beta endorphin.

4,316,896

AMINOACID DERIVATIVES AS ANTIHYPERTENSIVES

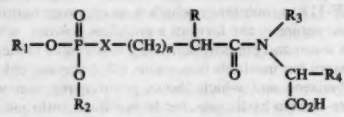
Eugene D. Thorsett, Fanwood; Arthur A. Patchett; Elbert E. Harris, both of Westfield, and Alan L. Maycock, Fanwood, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Sep. 7, 1978, Ser. No. 940,412

Int. Cl.³ C07D *277/20*

U.S. Cl. 424—200 **9 Claims**

1. A compound of the formula:



(I)

wherein

n is 0 or 1

R is lower alkyl, phenyl lower alkyl, hydroxyphenyl lower alkyl, hydroxy lqwer alkyl, aminoloweralkyl, guanidino lower alkyl, imidazoyl lower alkyl, indolyl lower alkyl, mercapto lower alkyl, lower alkyl mercapto lower alkyl;

R_3 and R_4 may be connected together to form an alkylene bridge of from 2 to 4 carbon atoms or an alkylene bridge of from 2 to 3 carbon atoms and one sulfur atom;

X is NR^5, S where R^5=H or lower alkyl;

R_1 is hydrogen, lower alkyl, phenyl lower alkyl or phenyl or substituted phenyl wherein the substituent is halo, lower alkoxy or lower alkyl;

R_2 is hydrogen, lower alkyl, phenyl lower alkyl, or phenyl or substituted phenyl wherein the substituent is halo, lower alkoxy or lower alkyl and pharmaceutically acceptable salts thereof.

4,316,897

METHOD OF LOWERING SERUM PROLACTIN

Wolfgang Lotz, Bad Krozingen, Fed. Rep. of Germany, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Sep. 10, 1980, Ser. No. 185,812

Int. Cl.³ A61K *31/33, 31/47, 31/54, 31/475*

U.S. Cl. 424—244 **5 Claims**

1. A method of treatment for individuals having a high prolactin concentration induced by the administration of a neuroleptic selected from the group consisting of chlorpromazine, methopromazine, reserpine, tetrabenazine, benzindopyrine, sulpiride, metoclopramide, haloperidol and thioridazine which comprises the administration of a prolactin lowering amount of a benzodiazepine derivative selected from the group consisting of chlordiazepoxide, diazepam, flunitrazepam, clonazepam, flurazepam, medazepam, bromazepam, lorazepam, oxazepam, prazepam, temazepam, cloxazolam, oxazolam and triazolam to such individual.

4,316,898

CEPHALOSPORINS

Bernd Wetzel; Eberhard Waitun; Roland Maier, all of Biberach an der Riss; Wolfgang Rueter, Laupertshausen; Uwe Lechner, Ummendorf, and Hans Goeth, Biberach an der Riss, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim KG, Ingelheim am Rhein, Fed. Rep. of Germany

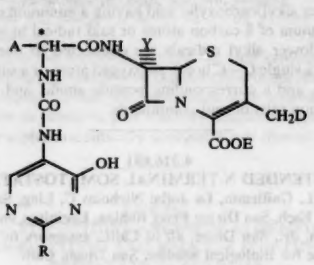
Filed May 20, 1980, Ser. No. 151,694

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1979, 2924948

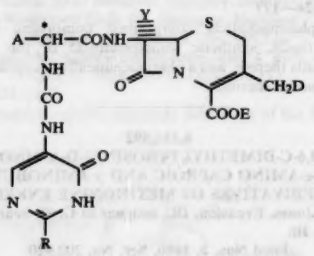
Int. Cl.³ C07D *501/36*

U.S. Cl. 424—246 **7 Claims**

1. A compound of the tautomeric formulas



and



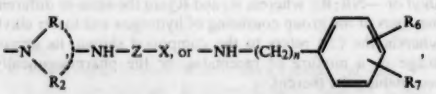
wherein

A is phenyl, 4-hydroxyphenyl, 2-thienyl, 3,4-dihydroxy-phenyl or 3-chloro-4-hydroxyphenyl;

Y is hydrogen or methoxy;

D is hydrogen, acetoxy, aminocarbonyloxy, pyridinium or aminocarbonyl-pyridinium;

R is cyclopropyl,



R_1 and R_2 are each hydrogen; straight or branched alkyl of 1 to 4 carbon atoms; cyclopropyl; cyclohexyl; or 4-hydroxycyclohexyl;

Z is alkylene of 1 to 4 carbon atoms;

X is hydroxyl, methoxy, aminocarbonyl, aminosulfonyl, aminocarbonylamino, —COOH, —$COOCH_3$, —$NHCOCH_3$, —$OCOR_5$, —$SOCH_3$ or —SO_2CH_3;

R_5 is hydrogen or alkyl of 1 to 3 carbon atoms;

n is 0 or 1; and

R_6 and R_7 are each hydrogen, chlorine, methyl, acetylamino, hydroxyl, aminocarbonylamino, nitro, methylsulfonylamino, acetyl, methylcarbonyloxy, aminocarbonyl, methylaminocarbonyl, cyano, methylsulfinyl, methylsulfonyl, aminosulfonyl, methylaminosulfonyl, ethylaminosulfonyl or dimethylaminosulfonyl; and

E is hydrogen or a protective group which is easily removable in vitro or in vivo;

or, when E is hydrogen, a non-toxic, pharmacologically acceptable salt thereof formed with an inorganic or organic base.

4,316,899

CHROMANONE DERIVATIVES, A PROCESS FOR THEIR PREPARATION AND COMPOSITIONS CONTAINING THEM

Roger E. Markwell, Great Dunmow, England, assignor to Beecham Group Limited, England

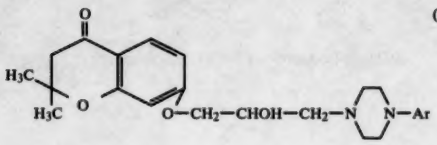
Filed Mar. 17, 1980, Ser. No. 131,237

Claims priority, application United Kingdom, Aug. 24, 1979, 29542/79

Int. Cl.³ C07D *405/14;* A61K *31/505*

U.S. Cl. 424—250 4 Claims

1. A compound of formula (II):



(II)

or a pharmaceutically acceptable acid-addition salt thereof wherein Ar is pyrimidyl.

3. A pharmaceutical composition for the treatment of hypertension, comprising an effective amount of a compound according to claim 1, together with a pharmaceutically acceptable carrier.

4,316,900

PIPERAZINOPYRROLOBENZODIAZEPINES

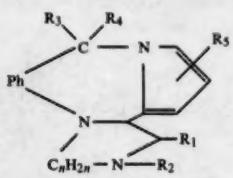
Jan W. F. Wasley, Chatham, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 933,358, Aug. 14, 1978, abandoned, which is a continuation-in-part of Ser. No. 839,696, Oct. 5, 1977, abandoned. This application Aug. 22, 1979, Ser. No. 68,827

Int. Cl.³ A61K *31/55;* C07D *487/18*

U.S. Cl. 424—250 8 Claims

1. A 1,3,4,14b-tetrahydro-2H,10H-pyrazino[1,2-a]pyrrolo[2,1-c]benzo-diazepine compound of the formula



wherein each of R_1, R_3 and R_4 is hydrogen or methyl; R_2 is hydrogen, lower or higher alkyl, lower alkenyl, lower alkynyl, 3 to 7 ring-membered cycloalkyl, cycloalkenyl or cycloalkyl-lower alkyl, hydroxy-lower alkyl, amino-lower alkyl, mono- or di-lower alkylamino-lower alkyl, carboxy-lower alkyl, lower carbalkoxy-lower alkyl, carbamoyl-lower alkyl, mono- or di-lower alkylcarbamoyl-lower alkyl, phenyl -lower alkyl as defined by HPh-lower alkyl, lower alkanoyl-lower alkyl, or benzoyl-lower alkyl as defined by HPHCO- lower alkyl; Ph is 1,2-phenylene, unsubstituted or substituted by one member selected from lower alkyl, lower alkoxy, lower alkylthio, halogeno and trifluoromethyl; C_nH_{2n} is lower alkylene separating both nitrogen atoms by 2 carbon atoms and R_5 is hydrogen, lower alkyl, carboxy, lower carbalkoxy, hydroxy-lower alkyl, amino-lower alkyl, mono- or di-lower alkylamino- lower alkyl; the lower alkoxy- carbonyl, lower or higher alkanoyl, adamantoyl, carbamoyl, mono- or di-lower alkylcarbamoyl, 3 to 7-ring membered cycloalkyl-carbonyl or HPhCO-derivatives or those compounds with R_2 and/or R_5 being (hydroxy, amino or lower alkylamino)-lower alkyl, or R_2 being hydrogen; the 2-N-oxide of those compounds with R_2 being different from hydrogen; and salts thereof, derived from pharmaceutically acceptable acids or ammonium or alkali metal bases.

4,316,901

ANIMAL FEED AND PROCESS

Melvin J. DeGeeter, and John M. McCall, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

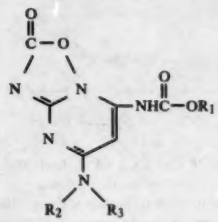
Filed Jun. 23, 1980, Ser. No. 161,943

Int. Cl.³ A61K *31/505, 31/53, 27/00*

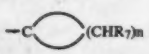
U.S. Cl. 424—251 6 Claims

1. A process for obtaining increased production in meat-producing, egg-laying, or milk-producing animals comprising feeding to said animals an effective amount of a compound of the formula:

Formula I



wherein R_1 is a member selected from the group consisting of alkyl of from 1 to 8 carbon atoms, inclusive, including isomeric forms thereof, R_2 and R_3 are the same or different and are a member selected from the group consisting of hydrogen, provided that both R_2 and R_3 are not hydrogen; alkyl of from 1 to 8 carbons, inclusive, including isomeric forms thereof, cycloalkyl of from 3 to 8 carbon atoms, alkyl substituted cycloalkyl of the formula



wherein n is an integer of from 2 to 7, inclusive, and R_7 is a member selected from the group consiting of hydrogen and alkyl of from 1 to 5 carbon atoms, inclusive, including isomeric forms thereof; alkenyl of from 2 to 8 carbon atoms, inclusive, including isomeric forms thereof, aralkyl wherein Ar is a member selected from the group consisting of phenyl, substituted phenyl wherein 1 or 2 hydrogens are replaced with chlorine, fluorine, bromine, iodine, R_6, $-OR_6$, or $-CF_3$ and the substituents can be the same or different, and R_6 is alkyl of from 1 to 4 carbon atoms, inclusive, including isomeric forms therof; and R_2 and R_3 taken together with $-N<$ is a heterocyclic moiety of from 4 to 8, inclusive, ring atoms and 1 or 2 hetero atoms selected from the group consisting of nitrogen, oxygen, or a substituted heterocyclic moiety wherein 1, 2, or 3 of the carbon atoms of the heterocycle are substituted with R_1.

4,316,902

THERAPEUTIC COMPOSITIONS AND VEHICLES FOR TOPICAL PHARMACEUTICALS

Ruey J. Yu, 4 Lindenwold Ave., Ambler, Pa. 19002, and Eugene J. Van Scott, 1138 Sewell La., Rydal, Pa. 19046

Filed Sep. 21, 1979, Ser. No. 77,726

Int. Cl.³ A61K *31/455, 31/05*

U.S. Cl. 424—266 11 Claims

1. An anhydrous non-sticky vehicle for topical application to the human body which vehicle is stable when stored for at least

one month at 40° C. and stable when frozen and subsequently thawed at room temperature comprising, in admixture, glyceryl monostearate present in a concentration of from 10–30 percent by weight and a member selected from the group consisting of isopropyl myristate and isopropyl palmitate present in a concentration 30–90 percent by weight of the total composition.

4,316,903

ANTI-MICROBIAL PIPERIDINO BUTEN-2-ONES

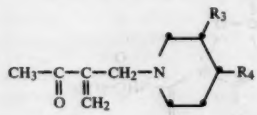
Nathaniel Grier, Englewood; Richard A. Dybas, Somerville, and Bruce E. Witzel, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 816,613, Jul. 18, 1977, Pat. No. 4,145,426. This application May 5, 1978, Ser. No. 903,363

Int. Cl.[3] **A01N** *43/40, 35/02;* **C07D** *211/44, 211/42, 211/60, 211/62, 227/10*

U.S. Cl. 424—267 **4 Claims**

1. A compound of the formula:



where one of R_3 or R_4 is C_1 to C_3 alkyl, hydroxy, C_1 to C_3 hydroxyalkyl, carboxy, carboxamido, N-loweralkylcarboxamido said alkyl having up to four carbons, loweralkoxycarbonyl said alkoxy having up to four carbons, 1-pyrrolidinyl, and 1-piperidinyl, and the other of R_3 and R_4 is hydrogen.

4,316,904

INDOLOPYRONE TETRAZOLES AND CARBOXAMIDOTETRAZOLES HAVING ANTIALLERGIC ACTIVITY

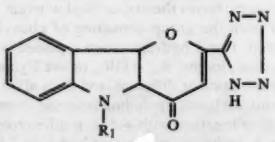
Richard E. Brown, 16 Ridge Dr., East Hanover, N.J. 07936, and Paul C. Unangst, 3659 Middleton Dr., Ann Arbor, Mich. 48105

Continuation-in-part of Ser. No. 912,645, Jun. 5, 1978, abandoned. This application Sep. 25, 1979, Ser. No. 78,632

Int. Cl.[3] **A61K** *31/41;* **C07D** *257/02*

U.S. Cl. 424—269 **16 Claims**

1. A compound having the structural formula



wherein R_1 is alkyl of from 1 to 6 carbon atoms or phenyl, and the pharmaceutically acceptable salts thereof.

4,316,905

MERCAPTOACYL DERIVATIVES OF VARIOUS 4-SUBSTITUTED PROLINES

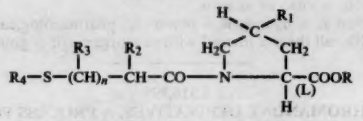
John Krapcho, Somerset, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jul. 1, 1980, Ser. No. 164,985

Int. Cl.[3] **A61K** *31/40;* **C07D** *207/12*

U.S. Cl. 424—274 **37 Claims**

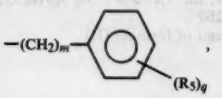
1. A compound of the formula



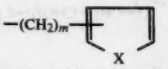
including a salt thereof wherein

R is hydrogen or lower alkyl;

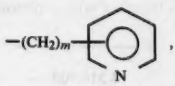
R_1 is $-(CH_2)_m$-cycloalkyl wherein cycloalkyl is a saturated ring of 3 to 7 carbons, 1-cyclohexenyl, 1,4-cyclohexadienyl,



$-(CH_2)_m$-(α-naphthyl), $-(CH_2)_m$-(β-naphthyl),



or

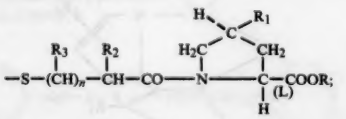


R_2 and R_3 are independently selected from the group consisting of hydrogen, lower alkyl, lower alkylthio, and halo substituted lower alkyl;

n is zero, one or two;

R_4 is hydrogen,

p-methoxybenzyloxycarbonyl, t-butoxycarbonyl, or

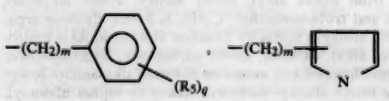


m is zero, one, two or three;

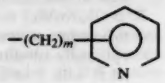
R_5 is hydrogen, lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, bromo, fluoro, trifluoromethyl, hydroxy, phenyl, phenyloxy, phenylthio, or phenylmethyl;

q is one, two or three provided that q is more than one only if R_5 is hydrogen, methyl, methoxy, chloro, or fluoro;

R_6 is lower alkyl, halo substituted lower alkyl, $-(CH_2)_m$-cycloalkyl wherein cycloalkyl is a saturated ring of 3 to 7 carbons,



-continued



wherein m, q, and R_5 are as defined above; and
X is oxygen or sulfur.

4,316,906

MERCAPTOACYL DERIVATIVES OF SUBSTITUTED PROLINES

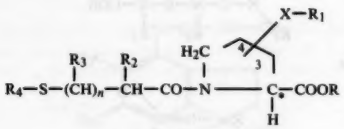
Miguel A. Ondetti, Princeton, and John Krapcho, Somerset, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 126,239, Mar. 3, 1980, abandoned, which is a continuation-in-part of Ser. No. 52,691, Jul. 2, 1979, abandoned, which is a continuation-in-part of Ser. No. 932,883, Aug. 11, 1978, abandoned. This application Oct. 31, 1980, Ser. No. 202,801

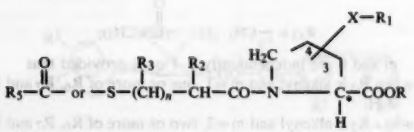
Int. Cl.³ A61K *31/40;* **C07D** *207/12*

U.S. Cl. 424—274 **61 Claims**

1. A compound of the formula



or a basic salt thereof wherein
the X—R_1 group is located at the 3- or 4-position of the proline ring;
X is oxygen or sulfur;
R is hydrogen or lower alkyl;
R_1 is lower alkyl, lower alkenyl, lower alkynyl, cycloalkyl, 1- or 2-adamantyl, phenyl, phenyl-lower alkylene, 1- or 2-naphthyl, biphenyl, substituted phenyl, substituted phenyl-lower alkylene, substituted 1- or 2-naphthyl, or substituted biphenyl wherein said substituent is one or two groups on the phenyl ring selected from the group consisting of lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, bromo, fluoro, iodo, trifluoromethyl, acetyloxy, and hydroxy;
R_2 and R_3 are independently selected from hydrogen, lower alkyl and trifluoromethyl;
R_4 is hydrogen,



R_5 is lower alkyl, phenyl, phenyl-lower alkylene, substituted phenyl, or substituted phenyl-lower alkylene wherein said substituent is one or two groups on the phenyl ring selected from the group consisting of lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, bromo, fluoro, iodo, trifluoromethyl, acetyloxy, and hydroxy; and
n is 0, 1 or 2.

4,316,907

HETEROCYCLIC COMPOUNDS, PROCESSES FOR THEIR PREPARATION AND THEIR USE

Alexander W. Oxford, Royston; John Bradshaw, Dane End, near Ware, and Ian H. Coates, Hertford, all of England, assignors to Glaxo Group Limited, London, England

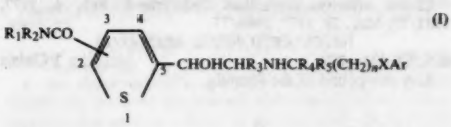
Filed Jun. 27, 1980, Ser. No. 163,563

Claims priority, application United Kingdom, Jun. 29, 1979, 22736/79

Int. Cl.³ A61K *31/38;* **C07D** *333/24*

U.S. Cl. 424—275 **16 Claims**

1. A compound of general formula (I):



(I)

in which the amide function is in the 2 or 3 position on the thiophene ring, and wherein R_1, R_2, R_3, R_4 and R_5, which may be the same or different, each represents a hydrogen atom or a lower alkyl group;
X represents —CH_2—, —O— or —NR_6— where R_6 represents a hydrogen atom or a lower alkyl group;
n is a number from zero to 3 with the proviso that when n is zero X can not represent —O— or —NR_6—;
Ar represents a phenyl group optionally substuted by one or more substituents selected from halogen atoms, C_1–C_3 alkyl groups, phenyl groups and the groups —OR_7 or amino groups (—NR_8R_9) in which R_7 and R_8 and R_9 independently represent a hydrogen atom or a C_1–C_3 alkyl group or an alkylenedioxy group of formula —$O(CH_2)_mO$— where m is 1 or 2 and physiologically acceptable salts thereof.

4,316,908

PESTICIDAL SULFINYLAMIDES

Odd Kristiansen, Möhlin, and Jozef Drabek, Oberwil, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

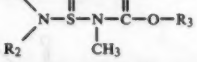
Filed Oct. 27, 1980, Ser. No. 200,804

Claims priority, application Switzerland, Nov. 5, 1979, 9909/79; Sep. 9, 1980, 6761/80

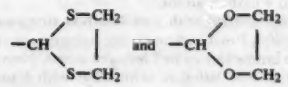
Int. Cl.³ A01N *43/28, 43/30, 41/02;* **C07D** *317/12, 339/06;* **C07C** *125/067*

U.S. Cl. 424—277 **6 Claims**

1. A compound of the formula



wherein
R_1 is hydrogen or C_1–C_6-alkyl,
R_2 is C_1–C_6-alkyl or C_1–C_6-alkoxy, and
R_3 is phenyl which is unsubstituted or mono- or polysubstituted by identical or different substituents selected from the group consisting of halogen, C_1–C_6-alkyl, C_1–C_6-alkoxy, C_1–C_6-alkylthio, C_2–C_6-alkenyl, C_2–C_6-alkynyl, nitro,



5. An insecticidal composition which comprises an insecticid-

ally effective amount of a compound according to claim 1 as active ingredient, and suitable carriers and/or other additives.

4,316,909
FUNGICIDAL COMPOSITIONS

Walter Kunz, Oberwil, Switzerland; Wolfgang Eckhardt, Lörrach, Fed. Rep. of Germany, and Adolf Hubele, Magden, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

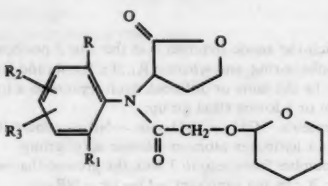
Division of Ser. No. 2,490, Jan. 11, 1979, abandoned, and Ser. No. 873,585, Jan. 30, 1978, Pat. No. 4,147,792. This application Aug. 22, 1980, Ser. No. 180,265

Claims priority, application Switzerland, Feb. 4, 1977, 1381/77; Mar. 28, 1977, 3884/77

Int. Cl.³ C07D *407/12;* A01N *43/16*

U.S. Cl. 424—279 **7 Claims**

1. A compound of the formula



wherein

R represents C_1-C_4-alkyl, C_1-C_4-alkoxy or halogen,

R_1 represents C_1-C_3-alkyl, C_1-C_4-alkoxy or halogen,

R_2 represents hydrogen, C_1-C_3-alkyl, C_1-C_4-alkoxy or halogen,

R_3 represents hydrogen or methyl,

with the total number of C atoms of the substituents R, R_1, R_2 and R_3 not exceeding 8, and

R_4 represents hydrogen or methyl.

4,316,910
COMBATING ARTHROPODS WITH SUBSTITUTED 2-CARBAMOYLOXIMINO-BUTANES

Jörg Stetter, Wuppertal; Bernhard Homeyer, Leverkusen; Ingeborg Hammann, Cologne, and Hans-Ludwig Elbe, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

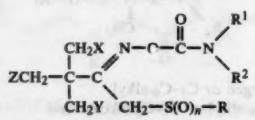
Filed Aug. 11, 1980, Ser. No. 176,814

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1979, 2933600

Int. Cl.³ A01N *47/12;* C07C *149/437*

U.S. Cl. 424—298 **8 Claims**

1. A substituted 2-carbamoyloximinobutane of the formula



in which

R is alkyl with 1 to 4 carbon atoms or alkylthioalkyl with 1 to 4 carbon atoms in each alkyl moiety,

R^1 is alkyl with 1 to 4 carbon atoms, alkoxyalkyl with 1 to 4 carbon atoms in each alkyl moiety, or alkenyl or alkynyl with 2 to 4 carbon atoms,

R^2 is hydrogen, alkyl with 1 to 4 carbon atoms or $—SR^3$,

R^3 is alkyl with 1 to 4 carbon atoms, halogenoalkyl with 1 to 2 carbon atoms and up to 5 halogen atoms, phenyl, phenyl substituted with halogen, with alkyl with 1 to 2 carbon atoms or with halogenoalkyl with 1 to 2 carbon atoms and up to 5 halogen atoms, alkoxycarbonyl with 1 to 4 carbon atoms in the alkyl moiety, $—N(CH_3)R^4$, or a radical identical to that to which $—SR^3$ is bonded,

R^4 is alkyl with 1 to 4 carbon atoms, alkoxycarbonyl with 1 to 4 carbon atoms in the alkyl moiety, or phenylsulphonyl optionally substituted on the phenyl with halogen, with alkyl with 1 to 2 carbon atoms or with halogen-oalkyl with 1 to 2 carbon atoms and up to 5 halogen atoms,

X is hydrogen or halogen,

Y is hydrogen or halogen,

Z is halogen, and

n is 0, 1 or 2.

6. An arthropodicidal composition comprising an arthropodicidally effective amount of a compound according to claim 1 in admixture with a diluent.

7. A method of combating arthropods comprising applying to the arthropods, or to a habitat thereof, an arthropodicidally effective amount of a compound according to claim 1.

4,316,911
UREIDOSULFENYL CARBAMATE NEMATICIDES

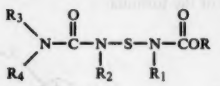
Caleb W. Holyoke, Jr., Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 3, 1980, Ser. No. 203,635

Int. Cl.³ A01N *37/18;* C07C *119/18*

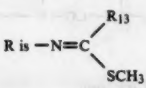
U.S. Cl. 424—298 **24 Claims**

1. A compound of the formula



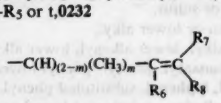
(I)

wherein

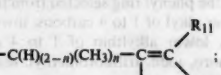


R_1 and R_2 are the same and are C_1–C_3 alkyl;

R_3 is H, C_1–C_4 alkyl, C_5–C_6 cycloalkyl, $—C(H)(2—m)(CH_3)_m—C{\equiv}C—R_5$ or t,0232



R_4 is $—C(H)(2—n)(CH_3)_n—C{\equiv}C—R_9$ or



;

R_5, R_6, R_7, R_8, R_9, R_{10}, R_{11} and R_{12} are independently H or CH_3;

R_{13} is $—CH_3$ or

m and n are independently 0, 1 or 2; provided that

when R_3 is alkenyl and m=1, one or more of R_6, R_7 and R_8 is H;

when R_3 is alkenyl and m=2, two or more of R_6, R_7 and R_8 are H;

when R_4 is alkenyl and n=1, one or more of R_{10}, R_{11} and R_{12} are H;

when R_4 is alkenyl and n=2, two or more of R_{10}, R_{11} and R_{12} are H;

further provided that when R_3 is C_5—C_6 cycloalkyl, $—CH(CH_3)_2$, $—CH(CH_3)CH_2CH_3$, or when m is 1, then n is 0 or 1; and when R_3 is $—C(CH_3)_3$ or m is 2, then n is 0 (zero).

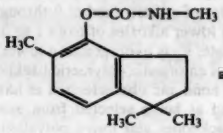
4,316,912

COMBATING PESTS WITH 1,1-DIMETHYL-INDAN-yl N-ALKYL-CARBAMIC ACID ESTERS

Detlef Grotkopp, Duesseldorf; Karlfried Wedemeyer, Cologne; Wilhelm Brandes, Leichlingen; Hans Scheinpflug, Leverkusen, and Peter Roessler, Bergisch-Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

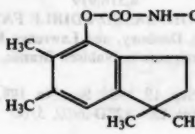
Continuation of Ser. No. 936,992, Aug. 25, 1978, abandoned.
This application Feb. 19, 1980, Ser. No. 122,159
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1977, 2739192
Int. Cl.³ A01N *47/10*; C07C *125/067*
U.S. Cl. 424—300 5 Claims

1. A 1,1-dimethyl-indan-4-yl N-alkyl-carbamic acid ester selected from the group consisting of 1,1,5-trimethyl-indan-4-yl N-methyl-carbamic acid ester of the formula



and

1,1,5,6-tetramethyl-indan-4-yl N-methyl-carbamic acid ester of the formula



5. A method of combating fungi which comprises applying to the fungi, or to a habitat thereof, a fungicidally effective amount of a compound according to claim 1.

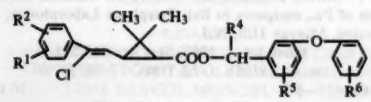
4,316,913

ARTHROPODICIDALLY ACTIVE STYRYLCYCLOPROPANECARBOXYLIC ACID ESTERS

Rainer Fuchs, Wuppertal; Ingeborg Hammann, Cologne, and Wilhelm Stendel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 31, 1980, Ser. No. 136,023
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1979, 2916358
Int. Cl.³ A01N *53/00*; C07C *69/743, 121/75*
U.S. Cl. 424—304 7 Claims

1. A substituted styrylcyclopropanecarboxylic acid ester of the formula



in which

R^1 represents C_1–C_2-fluoroalkoxy, C_1–C_2-chlorofluoroalkoxy or C_1–C_2-fluoroalkylthio and

R^2 represents hydrogen or methoxy, or

R^1 and R^2 together represent C_1–C_2-fluoroalkylenedioxy,

R^4 represents hydrogen, cyano or ethynyl and

R^5 and R^6 independently represent hydrogen or fluorine.

6. A method of combating arthropods which comprises applying to the arthropods, or to a habitat thereof, an arthropodicidally effective amount of a compound according to claim 1.

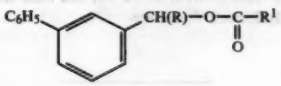
4,316,914

ELECTROSTATICALLY SPRAYABLE INSECTICIDAL FORMULATIONS

Ronald A. Coffee, Haslemere; Brian W. Young, Emmer Green, and Michael R. Middleton, Arborfield Cross, all of England, assignors to Imperial Chemical Industries Limited, London, England

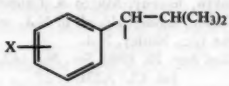
Continuation of Ser. No. 969,434, Dec. 14, 1978, abandoned.
This application Apr. 7, 1980, Ser. No. 137,781
Claims priority, application United Kingdom, Dec. 20, 1977, 52970/77
Int. Cl.³ A01N *37/00, 37/08*
U.S. Cl. 424—305 4 Claims

1. An electrostatically sprayable insecticidal formulation suitable for use in an electrostatic spraying apparatus to spray plants to give an even coating of the insecticide on the leaves of said plants, the formulation having after spraying a spray droplet size in the range of from about 50 to about 200 microns in diameter, and consisting essentially of a solution of from 0.5 to 50% by weight of an insecticide in an inert organic solvent medium, said medium being a mixture of inert organic solvents or a mixture of inert organic solvents and an antistatic agent, formulated so that the formulation has a resistivity at 20° C. in the range 1×10^6 to 1×10^{10} ohm centimeters, and a viscosity at 20° C. in the range 5 to 50 centistokes, and the insecticide being of formula:



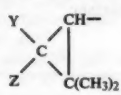
where R is hydrogen, and R^1 is selected from the group consisting of:

(i) a group of formula:



where X is selected from hydrogen, chlorine and methyl, and

(ii) a group of formula:



where Y and Z are selected from halogen, methyl, and a group of formula $R^2R^3C{=}CH{-}$, where R^2 and R^3 are selected from chlorine, bromine, methyl, ethyl, halo-substituted methyl and halo-substituted ethyl.

4,316,915

CENTER-FILLED CHEWING GUMS

Dominick R. Friello, Danbury, Conn.; Ellery Parker, Johnstown; Donald A. M. Mackay, Pleasantville, both of N.Y., and Subraman R. Cherukuri, Danbury, Conn., assignors to Life Savers, Inc., New York, N.Y.

Continuation of Ser. No. 80,714, Oct. 1, 1979, abandoned. This application Feb. 26, 1981, Ser. No. 238,312
Int. Cl.³ A23G *3/30*
U.S. Cl. 426—5 13 Claims

1. A center-filled chewing gum having improved softness retention, flexibility, and excellent shelf-life comprising a

chewing gum piece including an enclosed cavity therein, and a liquid fill in said cavity, said liquid fill consisting essentially of from about 94 to about 99.5% glycerin as a sweetener, from about 0.5 to about 6% by weight of a thickener to increase viscosity of the glycerin, said thickener being selected from the group consisting of carboxymethyl cellulose, a pectin, an alginate, agar, gum tragancanth, sodium carboxymethyl cellulose, and mixtures thereof, and optionally from about 0.1 to about 0.75% by weight flavor oil, said center fill containing no more than about 2% or less water and no further humectants.

4,316,916

TREATMENT OF A COFFEE EXTRACT

Siegfried Adamer, Lausanne, Switzerland, assignor to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Continuation of Ser. No. 3,348, Jan. 15, 1979, abandoned. This application Apr. 30, 1980, Ser. No. 145,226

Claims priority, application Switzerland, Jan. 20, 1978, 616/78

Int. Cl.³ A23F *5/18*

U.S. Cl. 426—329 **9 Claims**

1. A process for the preparation of a coffee extract suitable for carbonation which does not include the addition of anti-foaming additives, which comprises adjusting the pH of the extract to a value of from 3.0 to 4.5, and then eliminating the subsequently formed flocculate.

4,316,917

STABLE CAROTENOID SOLUTIONS

Thomas Antoshkiw, Kearny; Marco A. Cannalonga, Fort Lee, and Frank Guerin, Bloomfield, all of N.J., assignors to Hoffman-La Roche Inc., Nutley, N.J.

Filed Apr. 21, 1980, Ser. No. 142,273

Int. Cl.³ A23L *1/27*

U.S. Cl. 426—540 **8 Claims**

1. A stabilized carotenoid composition comprising β-apo-8'-carotenal, a surfactant, a solubilizer component consisting of glycerol monocaprylate and propylene glycol dicaprylate-dicaprate and an antioxidant.

4,316,918

PRODUCTS INCLUDING EDIBLES COLORED WITH POLYMERIC RED COLORS

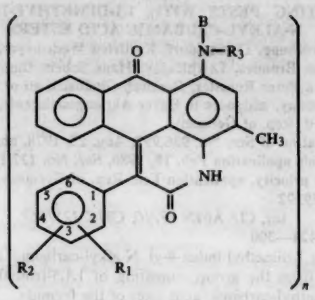
Leonard A. Bunes, San Carlos, Calif., assignor to Dynapol, Palo Alto, Calif.

Division of Ser. No. 39,977, May 17, 1979, Pat. No. 4,279,662, which is a continuation-in-part of Ser. No. 35,163, May 2, 1979, Pat. No. 4,249,007, which is a division of Ser. No. 751,857, Dec. 17, 1976, Pat. No. 4,182,885. This application Jun. 24, 1980, Ser. No. 162,456

Int. Cl.³ A23L *1/275*

U.S. Cl. 426—540 **14 Claims**

1. A colored edible comprising an edible substrate in intimate admixture with a color-imparting concentration of from 10 to 1000 ppm on a weight basis edible substrate of a water-soluble polymeric red colorant having the formula



wherein R_1 and R_2 are independently selected from the group of hydrogen, halos of atomic number 9 through 53 inclusive, lower alkyls and lower alkoxies of from 1 to 3 carbon atoms, nitro, and sulfonate; R_3 is hydrogen or a lower alkyl of 1 to 3 carbon atoms, B is an organic polymeric backbone attached to N by a covalent bond and characterized as having essentially no crosslinks and as being selected from among linear polyethyleneoxy backbones and linear polyalkylene backbones each having a molecular weight of from about 10,000 to about 150,000 Daltons, and n is a number from 10 to 4000.

4,316,919

SUNFLOWER-OIL-BASED EDIBLE FAT PRODUCT

Turiddu A. Pelloso, Danbury, and Lawrence Kogan, Stamford, both of Conn., assignors to Nabisco Brands, Inc., New York, N.Y.

Filed Sep. 19, 1980, Ser. No. 188,656

Int. Cl.³ A23D *3/02, 5/00*

U.S. Cl. 426—603 **13 Claims**

1. A sunflower-oil-based edible fat product which exhibits an SFI profile within the following ranges

50° F. > 8%

70° F. > 3%

92° F. < 4%

and which comprises a blend of: (a) from 30 to 75% by weight of the fat product of a randomly interesterified first portion comprising from 30 to 100% hydrogenated sunflower oil and from 0 to 70% liquid sunflower oil, both based on the weight of the first portion; and (b) from 25 to 70% by weight of the fat product of a second portion comprising from 60 to 100% liquid sunflower oil containing at least 65% by weight linoleic acid, and up to 40% hydrogenated sunflower oil based on the weight of the portion; wherein the fat product contains, based on its combined weight, less than 21% total of palmitic and stearic acids, and from 32 to 55% linoleic acid.

4,316,920

THICK FILM RESISTOR CIRCUITS

John F. Brown, Emmaus, and Robert M. Stanton, Allentown, both of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

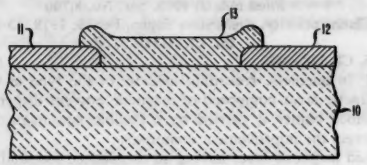
Filed Jul. 3, 1980, Ser. No. 165,551

Int. Cl.³ H05K *3/12;* H01C *17/06, 17/30*

U.S. Cl. 427—96 **10 Claims**

1. A method for fabricating a thick film resistor circuit including copper conductors (**11, 12**) on a substrate (**10**) comprising the steps of depositing a paste including the copper on the substrate, heating the structure at a temperature sufficient to establish adhesion between the metallization and substrate, forming a resistor material (**13**) on said substrate and portions of the conductors, heating the resulting structure in an oxidizing atmosphere to establish a desired resistivity for the resistor material, and heating the structure in a reducing atmosphere to establish a desired resistivity for the conductor, characterized

in that the conductor paste includes glass frits so that adhesion is acheived by heating in an oxidizing atmosphere at a temperature in the range 600–1100 degrees C. and the metal oxide



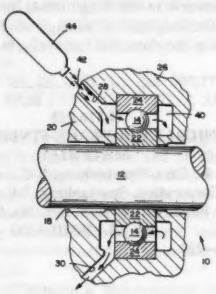
resulting from the initial heating is reduced at a temperature in the range 250–400 degrees C. so as not to significantly affect the resistor material.

4,316,921

HIGH TEMPERATURE LUBRICATING PROCESS

Robert W. Taylor, and Thomas E. Shell, both of Livermore, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 4, 1979, Ser. No. 81,987
Int. Cl.[3] C23C *11/00*
U.S. Cl. 427—249 46 Claims



1. A process for providing substantially without combustion, a solid friction reducing lubricant on a load bearing surface comprising:

contacting a load bearing surface with a gaseous phase including at least one component which reacts in a predetermined temperature range to produce a solid reaction product, said solid reaction product having lubricant properties; and

maintaining said load bearing surface within said predetermined temperature range at such times as said load bearing surface is contacted with said gaseous phase so that said solid reaction product deposits directly on said load bearing surface.

4,316,922

AQUEOUS EPOXY PHOSPHATE DISPERSIONS COMPRISING N-BUTANOL, N-HEXANOL AND ETHYLENE GLYCOL MONOBUTYL ETHER

Donald R. Perine, Missouri City, and Peter A. Lucas, Richwood, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 23, 1980, Ser. No. 200,223
Int. Cl.[3] C08L *63/00*; C08K *5/05, 5/06*; B65D *23/02*
U.S. Cl. 428—35 10 Claims

1. An aqueous coating composition, exclusive of catalysts and curing agents, comprising:

(1) a phosphorylated epoxide reins preparable by the reaction of a DGEBA-type polyether, polyol epoxide with orthophosphoric acid and water and containing phosphomonoester (—O—$PO(OH)_2$) groups;

(2) at least enough of a teritary aliphatic amine to render said resin water-dispersible, by salification of said ester groups,

(3) water,

and,

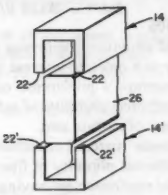
(4) n-butanol, n-hexanol and butoxyethanol, in the proportions of from about 10 to about 30 parts of the butanol and from about 40 to about 20 parts of the hexanol per 50 parts by weight of the butoxyethanol.

4,316,923

PRECISION DIELECTRIC FILLED FERRITE TOROID FOR USE IN MICROWAVE DEVICES

Frank R. Monforte, Los Altos, and Giltan M. Argentina, San Jose, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Continuation of Ser. No. 757,705, Jan. 7, 1977, abandoned, which is a division of Ser. No. 567,757, Apr. 14, 1975, Pat. No. 4,007,541. This application Jun. 26, 1980, Ser. No. 162,299
Int. Cl.[3] B32B *33/00*; H01P *3/00*; H01F *17/02*
U.S. Cl. 428—68 2 Claims



1. A composite toroid including an outer toroid of a magnetic material of selected length, and having a centrally extending insert of similar length disposed therein, the composite toroid being further defined by;

a pair of physically distinct complementary magnetic material parts formed of fired ferrite, having smooth confronting surfaces and assembled together along the confronting surfaces to define a two-piece outer toroid, the latter further including a precisely machined slot centrally extending its full length therethrough to receive the insert of equally full length, said two-piece outer toroid of fired ferrite including distinct interface corresponding to the smooth confronting surfaces along the lengths thereof;

wherein said two-piece outer toroid of fired ferrite exhibits the hystersis loop characteristics of a single piece of the magnetic material; and

said insert extends within the full lengths of the assembled two-piece toroid with all surfaces of the insert in intimate contact with the respective confronting surfaces of the slot of the magnetic material parts along their entire lengths.

4,316,924

SYNTHETIC FUR AND PROCESS FOR PREPARATION THEREOF

Norihiro Minemura, Takatsuki; Manabu Toyao, Ibaraki; Tsukasa Kobayashi, and Mikio Tashiro, both of Matsuyama, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Mar. 12, 1980, Ser. No. 129,667
Claims priority, application Japan, Mar. 26, 1979, 54-34216; Aug. 20, 1979, 54-104936; Sep. 26, 1979, 54-122528; Oct. 15, 1979, 54-131782; Jan. 24, 1980, 55-6291; Jan. 28, 1980, 55-7715; Feb. 4, 1980, 55-11430
Int. Cl.[3] B32B *3/02*; D02G *3/00*
U.S. Cl. 428—89 11 Claims

1. A synthetic fur comprising relatively long and thick guard

hair-like raised synthetic fibers, each having a transverse cross-section wherein at least one constricted part is formed,

the end portions of a majority of said guard hair-like raised synthetic fibers being divided into plural fibers at the constricted part or parts in each of their transverse cross-sections,

and underfur-like raised synthetic fibers, each having a rate of dissolution in a solvent or of hydrolysis with a hydrolyzing agent higher than that of said guard hair-like raised synthetic fibers, and a length and fineness less than those of said guard hair-like raised synthetic fibers.

4,316,925

FIBER REINFORCED CEMENTITIOUS CASTINGS

John Delmonte, 1753 N. Allen Ave., Glendale, Calif. 91201

Filed Oct. 9, 1980, Ser. No. 195,335
Int. Cl.³ B32B *9/00*
U.S. Cl. 428—105 **17 Claims**

1. A hardened structure comprising a coalesced cement-like material having as a discrete internal portion of the cross section of said structure a preformed composite reinforcement comprising a gathered plurality of substantially unidirectionally aligned fibers of carbon and,

a hardened binder material constituting the means for holding said gathered plurality of fibers in said alignment,

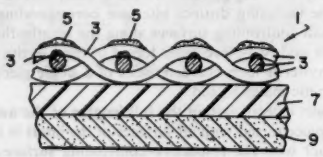
said composite reinforcement having a coefficient of thermal expansion of predetermined value relative to the coefficient of thermal expansion of said coalesced cement-like material.

4,316,926

NON-SLIP MATERIAL FOR THE HAND

Bernard Kaminstein, 329 Franklin Pl., Paramus, N.J. 07652

Filed Jan. 25, 1979, Ser. No. 6,460
Int. Cl.³ B32B *3/10*
U.S. Cl. 428—137 **10 Claims**



1. A non-slip material for the hand comprising, a web being formed with a plurality of pores, wherein said pores are sufficiently large so that the flesh of the hand will press into said pores when pressed against one surface of said web;

a coating comprising a tackifier being disposed on said one surface of the web but not on opposed web portions forming the inner periphery of said pores, so that when the hand presses onto the one surface, part of the flesh of hand is free to move into the pores while another part on the hand is retained on the one surface by said coating; and

a supporting substrate, and means to bond the opposite surface of the web to said substrate; said substrate being formed so as to engage a handle to be gripped and wherein said substrate is compressible, so that the part of the flesh of the hand in moving into the pores compresses the substrate and provides a slip-resistant grip to the handle.

4,316,927

MAGNETIC RECORDING MEDIUM

Shigeo Kimura, and Toshihiko Yamada, both of Tagajo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 2, 1979, Ser. No. 8,766
Claims priority, application Japan, Feb. 9, 1978, 53-13860
Int. Cl.³ G11B *5/68*
U.S. Cl. 428—216 **5 Claims**

1. In magnetic recording medium of the type in which a magnetic layer composed of magnetic powder dispersed in a resinous binder is carried by a flexible non-magnetic base, wherein the improvement comprises:

said magnetic layer having an unbalanced longitudinal and transverse tensile strength relationship comprising:

a layer having a thickness of between 2 to 5 microns;

a Young's modulus of from 700 to 1400 kg/mm² in the longitudinal direction; and

a Young's modulus of from 400 to 1100 kg/mm² in the direction transverse to the longitudinal direction, wherein the ratio of the longitudinal Young's modulus to the Young's modulus in the direction transverse thereto is from 1.3 to 1.9; and

said non-magnetic base having an unbalanced longitudinal and transverse tensile strength relationship comprising:

a layer having a thickness of between 6 to 14 microns;

a Young's modulus of not less than 350 kg/mm² in the longitudinal direction; and

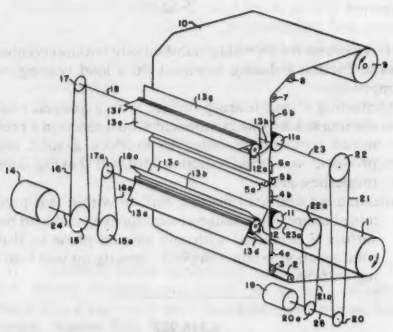
a Young's modulus of not less than 500 kg/mm² in the direction transverse to the longitudinal direction, wherein the ratio of the longitudinal Young's modulus to the Young's modulus in the direction transverse thereto is from 0.5 to 0.9.

4,316,928

MECHANICALLY SURFACE FINISHED TEXTILE MATERIAL

Wolfgang K. F. Otto, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Nov. 9, 1979, Ser. No. 92,815
Int. Cl.³ D03D *3/00*
U.S. Cl. 428—229 **5 Claims**



1. An interlaced textile material having a body portion containing a plurality of fibers, of which at least about 20 percent by weight are synthetic fibers, in which said fibers have a curvature and are arranged so as to have convex side portions and concave side portions, the convex side portions which are exposed being substantially scarred and containing a multiplicity of generally short, rather thick, lamella shaped protrusions of an average length of less than about 0.05 mm. extending therefrom; said protrusions being of substantially the same chemical composition and molecular weight as the synthetic fibers from which they are formed; and said scarring resulting at least in part from deficiencies formed in the body of said fibers wherefrom said protrusions are formed.

4,316,929

HOT MELT SIZING COMPOSITIONS COMPRISING AN ACRYLIC ACID-ALKYL (METH)ACRYLATE TERPOLYMER

John M. McIntire; James M. Hawkins, and Raymond N. Vachon, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 30, 1979, Ser. No. 34,227

Int. Cl.[3] B32B 27/04; C08K 5/09; C08F 20/64, 220/64

U.S. Cl. 428—262 8 Claims

1. A hot melt textile sizing composition comprising a terpolymer of

(a) about 50 to about 70% by weight of at least one alkyl acrylate wherein the alkyl group contains from 1 to 4 carbon atoms,

(b) about 20 to about 40% by weight of at least one alkyl methacrylate wherein the alkyl group contains from 1 to 4 carbon atoms, and

(c) about 10% by weight acrylic acid or salt thereof, said terpolymer being dispersible in dilute sodium carbonate, and having a glass transition temperature of between 22° and about 40° C. and an I.V. of between about 0.1 and about 0.15 measured at 23° C. using 0.5 gram of polymer per 100 ml of a solvent consisting of a 60/40 mixture phenol/tetrachloroethanol.

4,316,930

HEAT-RESISTANT COMPOSITE MATERIAL FOR HOT GLASS HANDLING AND METHOD OF MAKING SAME USING A PHENYL POLYSILOXANE COATING

Edward J. Stengle, Jr., Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 24, 1980, Ser. No. 200,177

Int. Cl.[3] B32B 17/04, 17/10, 27/12, 33/00

U.S. Cl. 428—266 14 Claims

1. A heat-resistant, relatively-rigid, composite material adapted to handling hot glass articles, and the like, comprising a tightly interwoven fabric substrate formed from extremely thin glass fibers, and a continuous heat-cured coating of essentially all phenyl polysiloxane resin having a finely-divided filler of heat-resistant particulate carbonaceous material therein extending over the glass-contacting surface and fully penetrating the said substrate.

9. The method of making a heat-resistant, relatively-rigid composite material adapted to handling hot glass articles, and the like, comprising the steps of cutting to size a lengthy ribbon of tightly interwoven flexible fabric substrate comprised of extremely thin glass fibers, coating both surfaces of said fabric substrate with a continuous layer of essentially all phenyl polysiloxane resin having a finely-divided filler of heat-resistant particulate carbonaceous material therein, and heat-curing the said layer of polysiloxane resin and carbonaceous filler fully penetrating the said fabric substrate into a relatively-rigid structure.

4,316,931

PLANAR TEXTILE STRUCTURE WITH IMPROVED HEAT RETENTION

Kurt Tischer, Hemsbach; Bohuslav Tecl, and Walter Föttinger, both of Weinheim, all of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Filed Feb. 25, 1980, Ser. No. 124,334

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1979, 2914616; Apr. 11, 1979, 7910585[U]

Int. Cl.[3] B05D 3/02, 5/00; B32B 27/34; D04H 1/58

U.S. Cl. 428—267 6 Claims

1. A method for improving the heat retention of a planar textile structure comprising:

(a) applying to at least one surface of said structure a dispersion comprised of:

(i) a carrier liquid;

(ii) a binder material capable of being cross-linked; and

(iii) 10 to 50% by weight, based on the solids content of the dispersion, of a metallic powder having an average grain size between 3 and 90 μm, the solids content of said dispersion being no greater than 50% by weight;

(b) immediately thereafter subjecting said applied dispersion to conditions effective to cross-link and solidify said binder prior to the complete removal of the carrier liquid from the dispersion; and

(c) thereafter removing any remaining carrier liquid from the structure, whereby said metallic powder is arranged on the fibers of the textile structure in a porous layer of the cross-linked binder and is covered on the surface thereof by a thin skin of the cross-linked binder material.

5. A planar textile structure with improved heat retention made according to the process of claim 1.

4,316,932

COMBATING FUNGI WITH α-AZOLYL-KETO DERIVATIVES

Eckart Kranz; Wolfgang Krämer; Karl H. Büchel, all of Wuppertal; Wilhelm Brandes, Leichlingen, and Paul-Ernst Frohberger, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 2, 1979, Ser. No. 54,067

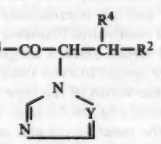
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1978, 2832234

The portion of the term of this patent subsequent to Sep. 22, 1998, has been disclaimed.

Int. Cl.[3] A01N 43/50, 43/82; C07D 233/60, 249/08

U.S. Cl. 424—269 7 Claims

1. An α-azolyl-keto derivative of the formula



in which R^1 represents C_{1-4}-alkyl; C_{1-4}-alkyl substituted by at least one substituent selected from the group consisting of halogen, C_{1-4}-alkylcarbonyloxy, optionally substituted phenylcarbonyloxy, C_{1-4}-alkyl- or dialkyl-carbamoyloxy, C_{1-4}-alkylsulphonyloxy, optionally substituted phenylsulphonyloxy, C_{1-4}-dialkylaminosulphonyloxy, C_{1-4}-dialkylaminosulphonyloxy, C_{1-4}-alkoxy and optionally substituted phenoxy wherein aforementioned optional substituents are selected from the group consisting of halogen, cyano, nitro, C_{1-4}alkyl, C_{5-7}cycloalkyl, halogenomethyl, halogenoethyl, and phenyl, phenoxy or benzyl, the last three radicals optionally being substituted by halogen, cyano or nitro;

R^2 represents the grouping $-CX^1X^2R^3$ or C_{1-4}-alkoxycarbonyl;

R^3 represents halogen or halogeno-C_{1-4}-alkyl;

R^4 represents the grouping $-O-CO-R^5$;

R^5 represents C_{1-8}-alkyl, C_{2-4}-alkenyl or alkynyl, halogeno-C_{1-4}-alkyl, with 1 to 5 halogen atoms, C_{5-7}-cycloalkyl, phenyl, benzyl, phenylethyl, phenyl, benzyl or phenylethyl substituted in the phenyl part with halogen, cyano, nitro or C_{1-2}-alkyl, C_{1-4}-alkylamino or dialkylamino, phenylamino, phenylamino substituted with halogen, nitro, cyano, C_{1-4}-alkyl, methoxy, ethoxy, methylthio, ethylthiohalogenomethyl or halogenoethyl;

X^1 and X^2 each independently represents hydrogen, fluorine chlorine or bromine; and

Y is a nitrogen atom or the CH group; or an addition salt thereof with an acid selected from the group consisting of a hydrogen-halide acid, phosphoric acid, nitric acid, sulphuric acid, a carboxylic acid and a sulphonic acid, or a metal salt complex thereof, the metal of the salt being selected from main groups II to IV and sub-groups, I, II and IV to VIII of the Periodic Table and the anion of the

salt being derived from a hydrogen halide acid, sulphuric acid, nitric acid or phosphoric acid.

6. A method of combating fungi which comprises applying to the fungi, or to a habitat thereof, a fungicidally effective amount of a compound according to claim 1.

4,316,933

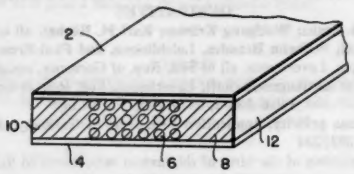
TAPE FOR USE AS THE WARP AND WEFT OF WOVEN FABRICS PARTICULARLY USEFUL FOR PACKAGING

Ian E. B. Fraser, The Coach House, Emberton Nr. Olney, Bucks, England

Continuation-in-part of Ser. No. 35,412, May 2, 1979, abandoned. This application Jul. 24, 1980, Ser. No. 171,953

Int. Cl.[3] B32B *5/04, 5/28*

U.S. Cl. 428—294 2 Claims



1. A reinforced laminated flat tape suitable for weaving into fabric, comprising two outer layers each formed of a sheet material having a non-tacky outer surface and of prescribed positive friction, and an intermediate layer comprising an elongate thread of continuous filaments formed of high tensile synthetic material which extends longitudinally of the length of the tape and are spread to even thickness across the central part and most of the width of the tape but terminate laterally inward of each lateral edge of the tape, and a bonding material applied between the outer layers and across the full width of the tape securing the spread filaments together and to each sheet layer over the entire tape width and effecting a sheet to sheet only connection laterally outwardly of each lateral edge of the filaments and up to each edge of the tape.

4,316,934

METHOD FOR MAKING LAMINATES COMPRISING A HARD FOAM LAYER AND A FIBER-REINFORCED SYNTHETIC RESIN LAYER

Leonhard Maier, Rodgau, and Wolfgang Pip, Darmstadt, both of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Jun. 30, 1980, Ser. No. 164,564

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1979, 2927122

Int. Cl.[3] B32B *5/18, 5/16;* B29D *27/00*

U.S. Cl. 428—308.4 2 Claims

1. A method for making a laminate comprising a hard foam layer and a fiber-reinforced synthetic resin layer, which method comprises heating and compressing, in two steps, at least one layer of a high-temperature resistant hard foam having a high compressive strength at room temperature and at least one layer of a fiber-containing synthetic resin capable of flowing and of hardening when heated, wherein in a first step, the temperature and pressure employed are sufficient for initiating flow of the synthetic resin and are applied until the synthetic resin has completed flowing, said pressure having a value exceeding the compressive strength of the foam at the temperature employed but not exceeding its compressive strength at room temperature and, wherein in a second step, at a temperature and for a time sufficient to complete hardening of the synthetic resin, pressure is applied which does not exceed the compressive strength of the foam at the temperature used.

2. A laminate, prepared by the method of claim 1.

4,316,935

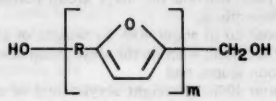
POLYISOCYANURATE FOAM AND LAMINATES THEREOF AND PROCESS FOR PRODUCING THEM

Ernest K. Moss, Clearwater, Fla., assignor to The Celotex Corporation, Tampa, Fla.

Continuation-in-part of Ser. No. 19,374, Mar. 12, 1979, abandoned. This application Nov. 14, 1980, Ser. No. 206,912

Int. Cl.[3] C08G *18/62, 18/76;* B32B *27/00*

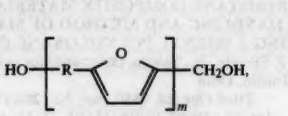
U.S. Cl. 428—304.4 17 Claims



1. A foam characterized by the presence of isocyanurate groups and by a friability of no greater than 21 percent, as measured by the ASTM C-421 friability test, which is the reaction product of:

A. polymethylene polyphenyl isocyanate and

B. a furan resin of the formula

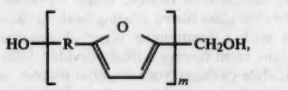


wherein R is $-CH_2-$ or $-CH_2-O-CH_2-$, and the average value of m is such that the furan resin has a viscosity of up to 50,000 centipoises at 25° C.

17. A laminate comprising a foam having facing sheets fixedly attached to its upper and lower surfaces, the foam being characterized by the presence of isocyanurate groups and by a friability of no greater than 21 percent, as measured by the ASTM C-421 friability test, and being the reaction product of:

A. polymethylene polyphenyl isocyanate and

B. a furan resin of the formula



wherein R is $-CH_2-$ or $-CH_2-O-CH_2-$, and the average value of m is such that the furan resin has a viscosity of up to 50,000 centipoises at 25° C.

4,316,936

SEALING OF CERAMIC AND CERMET PARTS, SEALING MATERIAL THEREFOR AND CERAMIC SEAL OBTAINED

Peter Hing, London, England, assignor to Thorn Electrical Industries Limited, London, England

Filed Sep. 4, 1979, Ser. No. 72,248

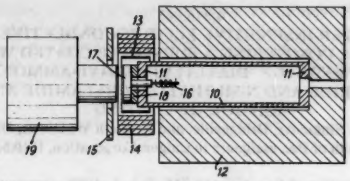
Claims priority, application United Kingdom, Sep. 6, 1978, 35720/78

Int. Cl.[3] B32B *5/16, 9/00;* C04B *35/66*

U.S. Cl. 428—325 6 Claims

1. A particulate sealing material for use in preparing hermetic seals between ceramic and cermet members, which material comprises at least 70 wt. % of a refractory oxide selected from alumina, magnesium aluminate spinel, a rare earth oxide, magnesia, thoria and stabilized zirconia and minor

quantities of a non-vitreous additive comprising SiO_2, MgO and B_2O_3.



5. A material as claimed in claim 1 comprising refractory oxide granules coated with finer particles of said additive.

4,316,937

WATER ABSORBENT ACRYLIC FIBER

Hiroyoshi Tanaka; Shigeru Fujii, and Mitsuo Suzuki, all of Ehime, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation of Ser. No. 1,399, Jan. 5, 1979, abandoned. This application Feb. 8, 1980, Ser. No. 119,677
Claims priority, application Japan, Jan. 19, 1978, 53/4473
Int. Cl.³ D02G *3/00*
U.S. Cl. 428—376 **6 Claims**

1. A water absorbent acrylic fiber having a porous core and a skin structure which is denser than said core, comprising a blended polymer which comprises about 90–99.9% by weight of an acrylic polymer co-blended with about 0.01–10% by weight of acrylonitrile-styrene copolymer which is miscible with but substantially incompatible with said acrylic polymer, said acrylonitrile-styrene copolymer (B) being a copolymer consisting of about 20–30% by weight of acrylonitrile and about 70–80% by weight of styrene, and said acrylic polymer being an acrylonitrile polymer comprising about 90–100 mol% of acrylonitrile, 0–10 mol% of an ethylenically unsaturated comonomer and about 0–0.3 mol% of a monoethylenic vinyl monomer containing sulfonic acid group, said fiber containing a mixture of microvoids and macrovoids.

4,316,938

HIGH DENSITY CARBON ADSORBENT COMPOSITE

George M. J. Slusarczuk, Schenectady, and Ronald E. Brooks, Guilderland, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 726,963, Sep. 27, 1976, abandoned. This application Aug. 17, 1979, Ser. No. 67,335
The portion of the term of this patent subsequent to May 6, 1997, has been disclaimed.
Int. Cl.³ B22F *1/02*
U.S. Cl. 428—403 **12 Claims**

1. A process for producing an adsorbent composite having a minimum specific gravity of about 2.0 consisting essentially of substrate particle at least substantially encapsulated with activated carbon, said activated carbon having a minimum surface area of about 200 square meters per gram and being adherently bonded to said substrate particle, which consists essentially of providing a substrate particle having a minimum specific gravity of about 2.0 and a particle size ranging from about 100 Angstroms to about 10 millimeters in diameter, providing an organic material which is a solid at room temperature and which at a temperature ranging from about 50° C. to about 1000° C. at atmospheric pressure decomposes to yield elemental carbon and gaseous product of decomposition, admixing a plurality of said substrate particles with said organic material to form a substantially uniform mixture, heating said mixture in a substantially oxygen-free atmosphere to decompose said organic material yielding elemental carbon and gaseous product of decomposition, and grinding the resulting carbon-substrate particle mass to produce said composite of a predetermined size ranging from about one micron to about 10 millimeters in diameter.

4,316,939

PROCESS FOR THE APPLICATION OF AN ANTI-CORROSIVE COATING UPON METALLIC OBJECTS, ESPECIALLY BOTTLES FOR LIQUEFIED GAS

Daniel Guyomard, Lamorlaye, France, assignor to Helic Van Cauwenberghe, Le Bourget, France

Filed Mar. 28, 1980, Ser. No. 135,130
Claims priority, application France, Mar. 29, 1979, 79 07884
Int. Cl.³ B05D *1/04*
U.S. Cl. 428—413 **13 Claims**

1. A process for applying an anti-corrosive coating upon a metallic object comprising:

shot cleaning the surface of the metallic object to be protected,

painting said surface with a paint containing more than about 90% by weight of pulverulent zinc in relation to the dry extract of said paint,

applying by electrostatic means a powdered resin capable of adhering to zinc when polymerized, followed by

polymerizing said powdered resin to complete said anti-corrosive coating

said paint comprises a binding agent which is a partially hydrolyzed organic silicate.

12. Metallic objects having an anti-corrosive coating applied by a process according to one of claims 1 and 11.

13. A metallic object as in claim 12 which is a liquefied gas bottle.

4,316,940

HIGH-SOLIDS POLYESTER AND AMINOPLAST COATING COMPOSITION

Glenn D. Thornley, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 132,501, Mar. 21, 1980, abandoned. This application Aug. 7, 1980, Ser. No. 175,849
Int. Cl.³ B32B *27/36, 27/38;* C08L *63/00*
U.S. Cl. 428—413 **13 Claims**

1. A coating composition of a film-forming blend and a solvent for the blend wherein the blend is at least 50% by weight of the combined weight of the blend and the solvent and consists essentially of

(a) 30–70% by weight, based on the weight of the blend, of a polyester polyol that is the reaction product of

(1) pentaerythritol and at least one branched-chain glycol selected from the group consisting of neopentyl glycol, pinacol, and mixtures of these, wherein the molar ratio of glycol to pentaerythritol is from 2:1 to 6:1,

(2) an aromatic or aliphatic monocarboxylic acid, or mixtures thereof, having no more than 18 carbon atoms, wherein the molar ratio of monocarboxylic acid to pentaerythritol is from 1:1 to 2.5:1, and

(3) a mixture of an aromatic and a aliphatic dicarboxylic acid wherein the molar ratio of aromatic acid to aliphatic acid is from 2:1 to 6:1,

wherein the polyol has a hydroxyl content of 5–9% by weight;

(b) 4–35% by weight, based on the weight of the blend, of an epichlorohydrin-bisphenol-A epoxy resin, the esterification product of said resin with a monocarboxylic acid, or mixtures of these; and

(c) 25–35% by weight, based on the weight of the blend, of an aminoplast resin.

4,316,941
RUBBER STOPPER FOR SEALING

Tsukasa Eguchi, Tokyo, and Mituharu Morozumi, Yokohama, both of Japan, assignors to Asahi Glass Company Ltd., Tokyo and Kashima Kagaku, Co., Ibaraki, both of, Japan

Filed Sep. 26, 1980, Ser. No. 190,957

Claims priority, application Japan, Oct. 2, 1979, 54-126389

Int. Cl.³ B32B *27/30*; B65D *39/00*

U.S. Cl. 428—421 **11 Claims**

1. A rubber stopper for sealing which comprises a rubber stopper substrate coated with a fluorine-containing elastomer comprising a graft copolymer having rubber-like elasticity comprising a fluorine-containing polymer linked to an organopolysiloxane, wherein said fluorine-containing polymer has a number average degree of polymerization in the range of 50 to 10,000 and said organopolysiloxane has a number average degree of polymerization in the range of 50 to 50,000.

2. The rubber stopper according to claim 1, wherein the fluorine-containing polymer is a terpolymer of tetrafluoroethylene, propylene, and glycidyl vinyl ether, the organopolysiloxane is a copolymer of dimethyl siloxane or methyl trifluorosiloxane and a siloxane having an amino-containing side chain, and wherein said fluorine-containing polymer is linked to said organopolysiloxane by a linking group having the formula

$$-\mathrm{CHCH_2NRCH_2}-,$$
$$\quad\;\;|$$
$$\quad\;\mathrm{OH}$$

wherein R represents hydrogen or an alkyl group.

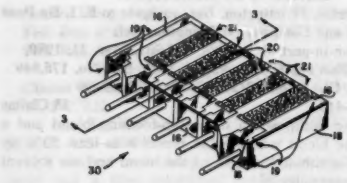
4,316,942
THICK FILM COPPER CONDUCTOR CIRCUITS

Charles C. Y. Kuo, Elkhart, Ind., assignor to CTS Corporation, Elkhart, Ind.

Filed Oct. 6, 1980, Ser. No. 194,477

Int. Cl.³ B32B *15/20*; B05D *5/12*; H01C *1/012*

U.S. Cl. 428—432 **8 Claims**



1. A thick film circuit bonded to a nonconductive substrate comprising a copper-and-frit mixture conductor applied to said substrate, said copper-and-frit mixture conductor comprising the reaction product of a mixture of copper and essentially pure, deleterious metal free glass frit fired in air at a temperature of about 850° C. to 950° C. to bond said mixture to the substrate with the glass frit serving as an intermediate bonding agent, and a resistive path disposed upon said copper-and-frit mixture conductor and said substrate, the resistive path being the reaction product of an oxidizable resistive material air-fired at a temperature of 850° C. to 950° C. subsequently to the firing of said mixture of copper and frit, said resistive path and copper-and-frit mixture conductor being the conjoint reaction product of heating the oxidized resistive path and copper-and-frit mixture conductor in a reducing atmosphere subsequently to the firing of said resistive path.

4,316,943
WATER-INSENSITIVE ELECTROCONDUCTIVE ARTICLE COMPRISING A SUBSTRATE COATED WITH POLYMERS OF DIALLYLDIMETHYL-AMMONIUM CHLORIDE AND N-METHYLOLACRYLAMIDE AND METHOD OF COATING

Gloria D. Sinkovitz, Bridgeville, and Kenneth W. Dixon, Drexel Hill, both of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 117,725, Feb. 1, 1980, abandoned, which is a continuation-in-part of Ser. No. 59,418, Jul. 20, 1979, abandoned, which is a division of Ser. No. 968,328, Dec. 11, 1978, abandoned, which is a continuation-in-part of Ser. No. 864,347, Dec. 27, 1977, abandoned. This application Dec. 12, 1980, Ser. No. 215,955

Int. Cl.³ B32B *27/06*; C08F *34/00*

U.S. Cl. 428—475.8 **13 Claims**

1. An electroconductive article which comprises a substrate and a layer of a coating composition which contains a cross-linked water-insensitive copolymer containing at least 15, but less than 30, percent by weight N-methylolacrylamide and from 70 to 85 percent by weight diallyldimethylammonium chloride.

9. A method of making an electroconductive article which comprises coating a substrate with at least 0.1 pound per 3000 square feet of a copolymer which contains at least 15, but less than 30, percent by weight N-methylolacrylamide and from 70 to 85 percent by weight diallyldimethylammonium chloride.

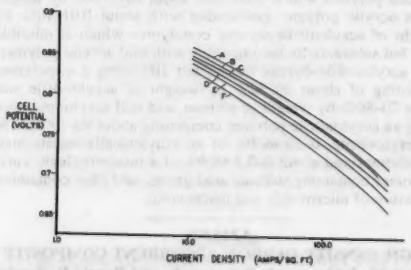
4,316,944
NOBLE METAL-CHROMIUM ALLOY CATALYSTS AND ELECTROCHEMICAL CELL

Douglas A. Landsman, West Hartford, and Francis J. Luczak, Glastonbury, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 18, 1980, Ser. No. 160,517

Int. Cl.³ H01M *4/86*

U.S. Cl. 429—44 **8 Claims**



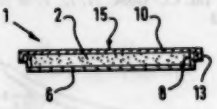
1. An electrochemical cell comprising a cathode electrode including a noble metal-base metal alloy oxygen reducing catalyst, said catalyst comprising a platinum-chromium alloy with a catalytic activity for the reduction of oxygen at least twice that of the platinum in unalloyed form wherein the surface area of the alloy is at least 30 m^2/g of platinum in the alloy.

6. A noble metal-base metal alloy catalyst for use in the catalytic reduction of oxygen consisting of a platinum-chromium alloy catalyst containing up to about 30 atomic percent chromium, the surface area of platinum in the alloy being at least 30 m^2/g and having catalytic oxygen reduction activity at least twice that of the unalloyed platinum.

4,316,945
BUTTON CELL ELECTRODE AND METHOD OF MANUFACTURE

Douglas H. Marcham, Crewkerne, and Kenneth A. Reichter, Bridport, both of England, assignors to Varta Limited, Crewkerne, England

Filed Sep. 2, 1980, Ser. No. 183,421
Claims priority, application United Kingdom, Oct. 4, 1979, 34384/79
Int. Cl.³ H01M 4/76, 4/04
U.S. Cl. 429—222 14 Claims



1. A mass plate electrode for a button cell comprising:
(a) a mass of active material having first and second surfaces and a side surface interconnecting the first and second main surfaces;
(b) a cup of liquid-permeable metal sheet having a base portion adjacent the first main surface of the mass, a side-wall portion adjacent the side surface of the mass and a peripheral closure portion;
(c) a lid having an inner portion adjacent the second main surface of the mass and a peripheral closure portion held by the peripheral closure portion of the cup; and
(d) the peripheral closure portions of the cup and the lid being bent so as to embrace the side wall portion of the cup.

4,316,946
SURFACE SENSITIZED CHALCOGENIDE PRODUCT AND PROCESS FOR MAKING AND USING THE SAME

Joseph I. Masters, Cambridge; Gershon M. Goldberg, Arlington, and Jerome M. Lavine, Lincoln, all of Mass., assignors to Ionomet Company, Inc., Brighton, Mass.

Filed Dec. 3, 1979, Ser. No. 99,581
Int. Cl.³ G03C 1/76, 5/00
U.S. Cl. 430—9 12 Claims

1. A photosensitive product for the formation of microlithographic resists, masks and the like comprising
a substrate,
a layer of an etchable chalcogenide glass on said substrate, and
an extremely thin deposit of silver on the surface of said chalcogenide glass, said silver deposit being thinner than about 100 A., said silver deposit being formed by depositing binderless silver halide thereon and photographically reducing and fixing said silver halide in the absence of exposure to activating radiation.

4,316,947
CADMIUM SULFIDE FOR ELECTROPHOTOGRAPHY

Kiyoshi Suzuki, Yokohama, and Hirokuni Kawashima, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

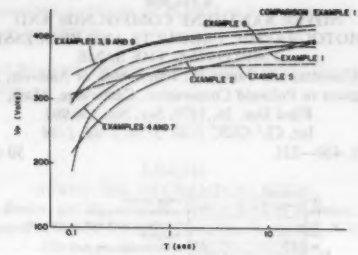
Filed Sep. 8, 1980, Ser. No. 184,752
Claims priority, application Japan, Sep. 13, 1979, 54-117779
The portion of the term of this patent subsequent to Apr. 8, 1997, has been disclaimed.
Int. Cl.³ G03G 5/08, 5/087
U.S. Cl. 430—94 3 Claims

1. Cadmium sulfide for electrophotography which is produced by reacting hydrogen sulfide with a solution containing cadmium sulfate, sulfuric acid and hydrochloric acid of a low concentration, and then firing the resulting cadmium sulfide without adding a donor impurity other than that derived from the hydrochloric acid.

4,316,948
PHOTOCONDUCTIVE CDS POWDER MATERIAL FOR ELECTROPHOTOGRAPHY

Yuji Nishigaki, Yokohama; Masanao Kasai, Tokyo, and Kazumi Okano, Fuchu, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 12, 1980, Ser. No. 186,582
Claims priority, application Japan, Sep. 19, 1979, 54-121288
Int. Cl.³ G03G 5/087
U.S. Cl. 430—94 12 Claims



1. A photoconductive material for electrophotography which comprises photoconductive cadmium sulfide particles to the surface of which is attached an inorganic compound selected from the group consisting of metallic and semiconductive hydroxides, oxides and sulfides.

3. An electrophotographic photosensitive member which comprises a photoconductive layer comprising photoconductive cadmium sulfide particles, to the surface of which is attached an inorganic compound selected from the group consisting of metallic and semiconductor hydroxides, oxides and sulfides, and a binder resin in which the photoconductive cadmium sulfide particles are dispersed.

4,316,949
PHOTOREACTIVE OLIGOMER COMPOSITION AND PRINTING PLATE

Pano C. Petrellis, Lake Elmo; Larry A. Lien, Forest Lake, and Wesley E. Zarr, Lake Elmo, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 14, 1979, Ser. No. 103,712
Int. Cl.³ G03C 1/76, 1/52
U.S. Cl. 430—159 13 Claims

1. A negative acting lithographic printing plate comprising an aluminum substrate having at least one surface thereof silicated and coated with an oligomeric diazonium resin and having coated on said diazonium resin a photoreactive composition comprising:
(a) 30–75% by weight of an oligomer of the formula

$$R_1(O-\overset{\overset{O}{\|}}{C}-NH-Q[NH-\overset{\overset{O}{\|}}{C}-O-R_3]_p)_n$$

wherein R_1 is the residue of an organic alcohol or a polyol having n hydroxyl groups removed therefrom,
R_3 is an acryloyl or methacryloyl containing group,
Q is the residue of a polyisocyanate having p+1 isocyanate groups removed therefrom,
p is a positive whole integer,
n is a positive whole integer of at least 2, and
n and p are such that the oligomer has at least 5 acryloyl or methacryloyl groups,
(b) 10–50% by weight of an organic polymeric binder,
(c) 0.1 to 10% by weight of an organic solvent soluble photosensitive oligomeric diazonium resin, and

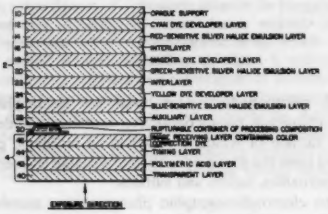
(d) an effective amount of a free radical photoinitiator system.

4,316,950

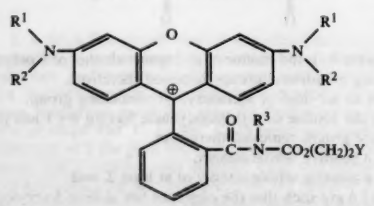
NOVEL XANTHENE COMPOUNDS AND PHOTOGRAPHIC PRODUCTS AND PROCESSES EMPLOYING THE SAME

Louis Cincotta, and James W. Foley, both of Andover, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 26, 1979, Ser. No. 106,902
Int. Cl.³ G03C *1/40, 5/54, 1/48, 1/84*
U.S. Cl. 430—221 **50 Claims**



10. A photographic product for forming a multicolor diffusion transfer image, said product comprising a first sheet-like element comprising a first support carrying a red-sensitive silver halide emulsion layer, a green-sensitive silver halide emulsion layer, and a blue-sensitive silver halide emulsion layer, said silver halide emulsion layers having associated therewith, respectively, a cyan image dye-providing material, a magenta image dye-providing material and a yellow image dye-providing material; a second sheet-like element comprising a second support; said first and second sheet-like elements being in superposed relationship, or adapted to be brought into superposed relationship, with said supports being outermost; at least one of said supports being transparent to permit photoexposure of said silver halide emulsions therethrough; a rupturable container releasably holding an aqueous alkaline processing composition, said rupturable container being so positioned as to be capable of discharging said processing composition between a pair of predetermined layers carried by said support; an image-receiving layer carried by one of said supports; and a colored xanthene compound being disposed in a processing composition permeable layer carried by one of said supports, said xanthene compound having the formula



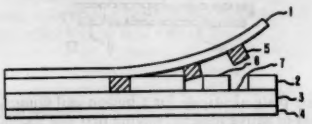
wherein each R^1 the same or different is hydrogen or alkyl, each R^2 the same or different is alkyl or phenyl, R^3 is phenyl or alkyl, Y is an electron-withdrawing group and A is an anion.

4,316,951

MULTILAYER PHOTOSENSITIVE ELEMENT WITH SOLVENT-SOLUBLE LAYER

Abraham B. Cohen, Springfield, and Roxy N. Fan, East Brunswick, both of N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 747,023, Dec. 2, 1976, abandoned, which is a continuation-in-part of Ser. No. 583,455, Jun. 3, 1975, abandoned. This application Aug. 18, 1980, Ser. No. 178,734
The portion of the term of this patent subsequent to Jan. 27, 1998, has been disclaimed.
Int. Cl.³ G03C *11/12, 1/78*
U.S. Cl. 430—253 **18 Claims**



1. A peel apart photosensitive element comprising, in order, from top to bottom **(1)** a strippable cover sheet, **(2)** a photoadherent layer coated on cover sheet **(1)** comprising a material with ethylenically unsaturated or benzophenone type groups, a polymeric binder and a photoinitiating system, **(3)** a solvent-soluble, nontonable, polymeric, nonphotosensitive contiguous layer, and **(4)** a sheet support, the unexposed element having the following force relationship: $C > A_1 << A_2$ wherein C represents the cohesive value of the unexposed photoadherent layer **(2)**; A_1 represents the adhesive force between cover sheet **(1)** and unexposed photoadherent layer **(2)**; and A_2 represents the adhesive force between unexposed photoadherent layer **(2)** and contiguous layer **(3)**; the exposed areas **(5)** of said photoadherent layer, after imagewise exposure through the cover sheet **(1)** of said element to actinic radiation, having greater adhesion to said cover sheet than to said contiguous layer, and are completely removable with said cover sheet and the unexposed areas **(6)** of said photoadherent layer having greater adhesion to said contiguous layer than to said cover sheet, the exposed element having the following force relationship: $C < A_1^* >> A_2^* < C^*$ wherein C is as defined above; A_1^* represents the adhesive force between exposed areas **(5)** of photoadherent layer **(2)** and cover sheet **(1)**; A_2^* represents the adhesive force between exposed areas **(5)** and contiguous layer **(3)**; and C^* represents the cohesive value of the photoadherent layer in the exposed areas **(5)**; the areas of the photoadherent layer remaining on the contiguous layer after stripping off the cover sheet must be insoluble under a condition under which the contiguous layer is soluble.

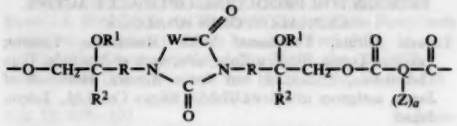
4,316,952

ENERGY SENSITIVE ELEMENT HAVING CROSSLINKABLE POLYESTER

Larry A. Wendling, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 148,776, May 12, 1980. This application Jan. 5, 1981, Ser. No. 222,582
Int. Cl.³ G03C *1/78, 1/68*
U.S. Cl. 430—285 **2 Claims**

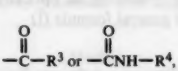
1. An energy-sensitive element having a substrate with a coating on at least one side thereon, said coating comprising an energy-curable polyester, said polyester being crosslinkable and having heterocyclic moieties and backbone alpha-methylene groups and repeating units of the general formula:



wherein

R is a single bond or an alkylene group having 1 to 6 carbon atoms and optionally one catenary oxygen;

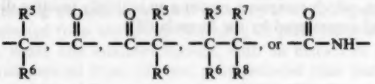
R^1 is hydrogen,



wherein R^3 is alkenyl or alkyl having 2 to 5 carbon atoms and can be substituted by phenyl or carboxyl and R^4 is aliphatic or aromatic hydrocarbyl having up to 8 carbon atoms;

R^2 is hydrogen or methyl;

W is a divalent group that is required to complete a 5- or 6-membered heterocyclic ring, wherein W is



and wherein R^5, R^6, R^7, and R^8 are independently hydrogen or lower alkyl of 1 to 4 carbon atoms;

Q is the divalent or trivalent residue of hydrocarbyl di- or tri-carboxylic acids, said residue formed by the removal of active hydrogens from the caroboxylic acid groups and containing up to 40 carbon atoms and optionally containing catenary oxygen atoms; and

a is zero or one, but can be one for no more than 20 mole percent of the carboxylic acids, and

Z is

4,316,953

PHOTOGRAPHIC EMULSION CONTAINING A STABILIZER, A PROCESS FOR ITS PRODUCTION AND PHOTOGRAPHIC MATERIALS

Herbert Gernert, Munich, Fed. Rep. of Germany, assignor to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 30, 1980, Ser. No. 173,636

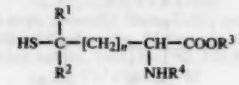
Claims priority, application Fed. Rep. of Germany, Aug. 4, 1979, 2931691

Int. Cl.³ G03C *1/31*

U.S. Cl. 430—569 **6 Claims**

1. In a light sensitive photographic material having at least one light sensitive silver halide emulsion of improved stability comprising a support and on the support at least one photosensitive silver halide emulsion and having at least one layer containing a complex of cobalt with a compound, said complex being capable of stabilizing a photographic silver halide emulsion and maintaining the relative speed,

wherein the improvement comprises the compound in said complex corresponds to the following formula:



in which

R^1 represents hydrogen or an alkyl, aryl, aralkyl or acyl group;

R^2 represents an alkyl, aryl, aralkyl or acyl group;

R^3 represents hydrogen or a cation,

R^4 represents hydrogen or an alkyl or acyl group,

n=0 or an integer,

and/or

R^1 and R^2 together represent the atoms required to complete a ring.

4,316,954

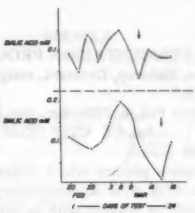
ASSAY FOR NEURAMINIC ACIDS

Roy E. Snoke, and Theodore W. Esders, both of Webster, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 18, 1980, Ser. No. 141,748

Int. Cl.³ C12Q *1/00, 1/26*

U.S. Cl. 435—4 **33 Claims**



1. A composition having a pH of between 5 and 9 comprising at least 0.1 unit neuraminic acid aldolase, at least about 0.005 unit pyruvate oxidase and from about 0.2 millimolar to about 10 millimolar electron acceptor.

20. A method for the detection of free and bound neuraminic acids comprising the steps of:

(a) contacting in an aqueous medium a sample for analysis and a composition having a pH between about 5 and 9 comprising at least 0.1 unit of a neuraminic acid aldolase, at least about 0.005 unit pyruvate oxidase and from about 0.02 millimolar to about 10 millimolar of an electron acceptor;

(b) determining any detectable product of (a);

(c) adding to said aqueous medium at least 0.01 unit neuraminidase; and

(d) determining the detectable product of (c); and

(e) quantifying the amount of free neuraminic acid and bound neuraminic acid from the difference of (b) and (d).

4,316,955

ENZYMATIC DEESTERIFICATION OF CEPHALOSPORIN METHYL ESTERS

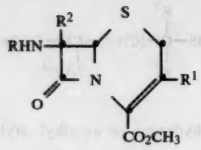
Bernard J. Abbott, and Dennis R. Berry, both of Greenwood, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 10, 1980, Ser. No. 205,538

Int. Cl.³ C12P *35/00*; C12N *9/18*

U.S. Cl. 435—47 **20 Claims**

1. A process for deesterifying cephalosporin methyl esters of the formula



wherein

R is hydrogen or $R^3CH(NH_2)CO$—; R^1 is methyl, chloro, acetoxymethyl, methoxy, methoxymethyl, aminocarbonyloxymethyl, methylthiadiazolylthiomethyl or methyltetrazolylthiomethyl;

R^2 is hydrogen or methoxy;

R^3 is phenyl, cyclohexadienyl, cyclohexadienyl monosubstituted with hydroxy, or phenyl mono- or disubstituted with halo, hydroxy, C_1–C_3 alkyl or C_1–C_3 alkoxy; which process comprises contacting the methyl ester with the enzyme produced by culturing *Streptomyces capillispira* under enzyme-producing conditions.

4,316,956

FERMENTATION PROCESS

Niels W. Lützen, Ballerup, Denmark, assignor to Novo Industri A/S, Denmark

Filed Feb. 6, 1980, Ser. No. 119,034
Int. Cl.³ C12P *19/20*
U.S. Cl. 435—96 **8 Claims**

1. A fermentation process which conists essentially of fermenting a 10%–45% w/w aqueous slurry of granular starch for the production of ethanol with an ethanol producing microorganism in the presence of alpha-amylase and gluco-amylase, the conduct of said fermentation being characterized by low levels of dextrin and fermentable sugars in solution in the fermentation broth throughout the fermentation, and, thereafter recovering enzymes from the fermentation broth for use anew in fermentation of granular starch.

4,316,957

PROCESS FOR THE PRODUCTION OF 7-DEAZAADENOSINE AND 7-DEAZAINOSINE

Takashi Nara, Tokyo; Ryo Okachi, Machida; Isao Kawamoto, Hiratsuka; Tomoyasu Sato, and Tetsuo Oka, both of Machida, all of Japan, assignors to Abbott Laboratories, North Chicago, Ill.

Filed Apr. 4, 1978, Ser. No. 893,433
Claims priority, application Japan, Apr. 4, 1977, 52-38358
Int. Cl.³ C12P *17/18*
U.S. Cl. 435—119 **6 Claims**

1. A process for the production of 7-deazaadenosine and 7-deazainosine which comprises culturing a microorganism belonging to the genus Micromonospora and having the identifying characteristics of *Micromonospora chalcea* subsp. *tubercidica* NRRL 11107 or a mutant thereof capable of producing at least one of said 7-deazaadenosine and 7-deazainosine in a nutrient medium until substantial antibacterial activity is detected in the culture liquor and thereafter isolating at least one of said 7-deazaadenosine and 7-deazainosine from said liquor.

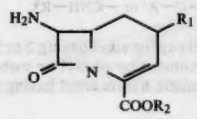
4,316,958

PROCESS FOR PRODUCING OPTICALLY ACTIVE CEPHALOSPORIN ANALOGS

Tadashi Hirata, Yokohama; Yukio Hashimoto, Yamato; Takehiro Ogasa; Shigeru Kobayashi, both of Machida; Ikuo Matsukuma, Yokkaichi, and Kazuo Kimura, Hofu, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

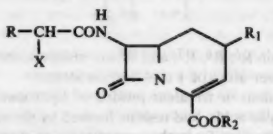
Filed Feb. 7, 1980, Ser. No. 119,451
Claims priority, application Japan, Feb. 10, 1979, 54-14553; Aug. 24, 1979, 54-107070
Int. Cl.³ C12P *17/18*
U.S. Cl. 435—119 **5 Claims**

1. A process for producing an optically active compound represented by the general formula (I)



(I)

wherein R_1 represents a hydrogen or a lower alkyl group, R_2 represents a hydrogen or a protective group of carboxylic acid, and the hydrogens at the 6- and 7-positions have a cis configuration, which comprises reacting an optically inactive dl-compound represented by the formula (III)



(III)

wherein R represents a substituted or unsubstituted unsaturated six-membered carbocyclic or five- or six-membered heterocyclic group, wherein said substituent is a hydroxy group, halogens, a nitro group or a methanesulfonamide group, X represents a hydrogen atom, an amino group, a hydroxy group or a lower alkyl group, R_1 and R_2 have the same significances as defined above, and the hydrogens at the 6- and 7-positions have a cis configuration, with an enzyme capable of optically selective deacylation and obtainable from a microorganism to optically selectively eliminate the acyl group at the 7-position of the compound represented by the formula III, and thereafter recovering said optically active compound.

4,316,959

PROCESS FOR PRODUCTION OF ANTIBIOTIC FROM STREPTOMYCES

Karl H. Michel, and Marvin M. Hoehn, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Apr. 28, 1980, Ser. No. 144,470
Int. Cl.³ C12P *17/12*
U.S. Cl. 435—122 **2 Claims**

1. The method of producing the A-32256 antibiotic, which comprises cultivating Streptomyces sp. NRRL 12067, or an A-32256-producing variant or mutant thereof, in a culture medium containing assimilable sources of carbon, nitrogen, and inorganic salts under submerged aerobic fermentation conditions until a substantial amount of antibiotic activity is produced.

4,316,960

PREPARATION OF 2,5-DIKETOGLUCONIC ACID

Donald A. Kita, Essex, and Dennis M. Fenton, Gales Ferry, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 79,665, Sep. 28, 1979, abandoned. This application Apr. 10, 1980, Ser. No. 139,036

Int. Cl.³ C12P 7/58

U.S. Cl. 435—137 9 Claims

1. A process for the production of 2,5-diketogluconic acid which comprises aerobically propagating *Acetobacter cerinus* in a fermentation medium containing D-glucose in an initial concentration of above about 20% and up to about 30% (wt/vol) and choline in an amount of at least about 0.04 wt. % based on the initial amount of D-glucose in said medium.

4,316,961

METHANE PRODUCTION BY ANAEROBIC DIGESTION OF PLANT MATERIAL AND ORGANIC WASTE

Donald L. Klass, Barrington, and Sambhunath Ghosh, Homewood, both of Ill., assignors to United Gas Pipe Line Company, Houston, Tex.

Filed Jun. 9, 1980, Ser. No. 157,474

Int. Cl.³ C12P 5/02

U.S. Cl. 435—167 11 Claims

1. In a process for improved methane production by anaerobic digestion, the improvement comprising: prior to said digestion, mixing organic material of normally low biodegradability, selected from the group consisting of plant material, organic waste and mixtures thereof, with an extract of plant material derived from different plant material than said low biodegradable plant material to be digested, said extract comprising about 10 to about 90 volume percent of the digestion volume; anaerobically digesting said mixture for a detention time greater than about 4 days; and then removing methane containing gas from the digester.

4,316,962

NOVEL CELL LINE

Dimitri Viza, Bourg-la-Reine, France, assignor to The International Institute of Differentiation Limited, Guernsey, Channel Islands

Filed Dec. 14, 1977, Ser. No. 860,439

Claims priority, application United Kingdom, Dec. 16, 1976, 52675/76

Int. Cl.³ C12N 5/02

U.S. Cl. 435—241 8 Claims

1. A cell culture system comprising cells of the cell line identified by the reference LDV/7 in a synthetic nutrient culture medium therefor.

5. A process for the propagation of cells of the cell line identified by the reference LDV/7, which comprises culturing the cells in a synthetic nutrient culture medium therefor.

4,316,963

LEADLESS GLAZE COMPOSITION MADE WITH ALKALINE EARTH MOLYBDENATE

Richard O. Hommel, Pittsburgh, and David Klimas, Bridgeville, both of Pa., assignors to The O. Hommel Company, Carnegie, Pa.

Filed Feb. 6, 1981, Ser. No. 232,162

Int. Cl.³ C03C 3/08, 9/00, 5/06

U.S. Cl. 501—14 5 Claims

1. A method of preparing a leadless glaze composition comprising the steps of:

a. batching a raw glaze composition including sources of silica, boric acid, alumina, alkaline earth oxides, alkali metal oxides, and alkaline earth molybdenate as the source of MoO_3 in the batch,

b. fritting the batch, and

c. milling the fritted batch.

4,316,964

AL_2O_3/ZRO_2 CERAMIC

Frederick F. Lange, Thousand Oaks, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 14, 1980, Ser. No. 167,902

Int. Cl.³ C04B 35/48

U.S. Cl. 501—105 9 Claims

1. A ceramic comprising:

5 to 95 v/o ZrO_2 in the form of crystalline grains having a diameter less than about 2 μm and a substantially tetragonal structure;

a rare earth oxide selected from the group consisting of Y_2O_3, CeO_2, Er_2O_3, and La_2O_3, there being at least enough of said rare earth oxide to increase the amount of ZrO_2 having a tetragonal crystal structure, but not enough of said rare earth oxide to form substantial amounts of said ZrO_2 having a cubic crystal structure; and

the remainder of said ceramic being substantially Al_2O_3.

4,316,965

LOW-EXPANSION CERAMICS AND METHOD OF PRODUCING THE SAME

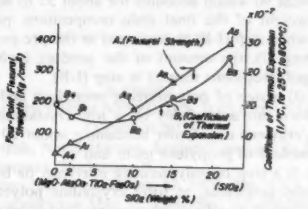
Isao Oda, and Tadaaki Matsuhisa, both of Nagoya, Japan, assignors to NGK Insulators Ltd., Nagoya, Japan

Filed May 22, 1980, Ser. No. 152,314

Claims priority, application Japan, Apr. 2, 1980, 55/41984

Int. Cl.³ C04B 35/04, 35/18, 35/44, 35/46

U.S. Cl. 501—112 12 Claims



1. Low-expansion ceramics having the chemical composition of the ceramics essentially consisting of 1.2 to 20% by weight of magnesia (MgO), 6.5 to 68% by weight of alumina (Al_2O_3), 19 to 80% by weight of titanium in terms of titanium oxide (TiO_2), 1 to 20% by weight of silica (SiO_2), and 0.5 to 20% by weight of iron in terms of ferric oxide (Fe_2O_3); wherein the major component of crystalline phase thereof is a solid solution of magnesium oxide-aluminum oxide-titanium dioxide-silicon oxide-iron oxide; and the ceramics has a coefficient of thermal expansion of not more than 20×10^{-7} (1/°C.) in a temperature range of 25° C. to 800° C., a four-point flexural strength of not smaller than 50 kg/cm² at room temperature, and a melting point of not lower than 1,500° C.

4,316,966

PROCESS FOR PRODUCING CHEMICALLY BLENDED PROPYLENE RESIN COMPOSITION

Hideo Mineshima, Ohtake; Nobuo Sato, and Susumu Masaki, both of Ichihara, all of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Filed Oct. 16, 1980, Ser. No. 197,530

Claims priority, application Japan, Oct. 16, 1979, 54-132436

Int. Cl.³ C08F 297/08

U.S. Cl. 525—53 7 Claims

1. In a process for producing a chemically blended propylene resin composition having an ethylene content of about 1 to about 40 mole% based on the entire monomer units of the resin composition which comprises (i) a pre-polymerization step wherein a small amount of ethylene or an alpha-olefin is polymerized in the presence of a catalyst composed of (a) a titanium

catalyst component containing magnesium, titanium, halogen and an electron donor and (b) an organometallic compound of a metal of Groups I to III of the Mendeleejeff's periodic table, and (ii) a multiplicity of subsequent polymerization steps wherein propylene and ethylene are polymerized in the presence of the reaction product containing the catalyst of the prepolymerization step (i), the amount of the titanium catalyst component (a) used, calculated as titanium atom, being about 0.01 to about 100 millimoles/liter of solvent when the polymerization is carried out in the presence of a solvent and about 0.01 to about 100 millimoles/liter of the volume of the polymerization zone when the polymerization is carried out in the gaseous phase; the improvement wherein

(I) the pre-polymerization step (i) is:

(I-A) a step wherein about 1 to about 1500 g, per millimole of titanium atom, of ethylene is polymerized;

(I-B) a step wherein about 1 to about 1500 g, per millimole of titanium atom, of propylene is polymerized; or

(I-C) a step wherein about 1 to about 1000 g, per millimole of titanium atom, of an alpha-olefin having 4 to 10 carbon atoms is polymerized; and

(II) said multiplicity of polymerization steps (ii) are the following steps (II-1), (II-2) and (II-3) which are carried out in separate reaction zones different from the reaction zone of the pre-polymerization step (i) in the above order or in the order of (II-1), (II-3), and (II-2),

(II-1) a step of polymerizing propylene to form not less than about 5000 g, per millimole of titanium atom, of crystalline polypropylene having an isotactic index of at least 90 which accounts for about 55 to about 95% by weight of the final resin composition, provided that when step (I-B) is employed as the pre-polymerization step (i), the amount of the product includes that of polypropylene formed in step (I-B),

(II-2) a step of polymerizing propylene and ethylene to form an amorphous or a low-crystalline propylene-/ethylene copolymer containing about 20 to about 80 mole% of propylene units; and

(II-3) a step of polymerizing ethylene, or both ethylene and propylene, to form crystalline polyethylene or a crystalline ethylene/propylene copolymer containing up to about 20 mole% of propylene units.

4,316,967

AMINE TERMINATED POLYMERS AND THE FORMATION OF BLOCK COPOLYMERS

William L. Hergenrother; Richard A. Schwarz; Richard J. Ambrose, all of Akron, and Robert A. Hayes, Cuyahoga Falls, all of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 848,962, Nov. 7, 1977, Pat. No. 4,151,222, which is a continuation-in-part of Ser. No. 574,676, May 5, 1975, Pat. No. 4,070,344. This application Mar. 5, 1979, Ser. No. 17,790

Int. Cl.[3] **C08L** *63/00;* **C08F** *18/24;* **C08L** *9/06*

U.S. Cl. 525—111 **16 Claims**

1. An epoxy copolymer composition, comprising:

an amine terminated polymer connected to an epoxy polymer constituent to form the epoxy copolymer;

said amine terminated polymer being an end capped polymer formed by the reaction of an anionically prepared polymer and a single polyisocyanate or polyisothiocyanate compound so that at least one unreacted isocyanate or isothiocyanate end portion exists wherein said unreacted isocyanate or isothiocyanate end portion has been converted to an amine group;

said polymer being a homopolymer or a copolymer, said homopolymer made from monomers selected from the class consisting of conjugated diene, vinyl substituted aromatic, vinyl substituted pyridine, vinyl substituted quinoline, and a compound selected from the class consisting of

1. $CH_2{=}CACN$ wherein A is CN, CF_3, CH_3 or H;

2. $CH_2{=}CACO_2R$ wherein A is CO_2R, SO_2R, CH_3 or H;

3. $CH_2{=}CANO_2$ wherein A is Cl, CH_3 or H;

4. $CH_2{=}CACON(R)_2$ wherein A is CH_3 or H;

wherein R is a 1 to 15 carbon atom alkyl, a 4 to 15 carbon atom cycloalkyl, an aromatic, a 1 to 15 carbon atom alkyl substituted aromatic, a 4 to 15 carbon atom cycloalkyl substituted aromatic, or hydrogen,

said copolymer made from monomers of conjugated dienes and vinyl substituted aromatics;

said polyisocyanate and said polyisothiocyanate having the formula

$$R{-}(N{=}C{=}X)_n$$

wherein R is an aliphatic containing from 2 to about 20 carbon atoms, a cycloaliphatic containing from 4 to about 20 carbon atoms, an aromatic containing from 6 to about 20 carbon atoms, and combinations thereof, n is an integer of 2 or 3 and X is selected from the class consisting of oxygen and sulfur; and

said epoxy polymer constituent is selected from the class consisting of epoxidized soy bean oil, butadiene diepoxide, dicyclopentadiene diepoxide, cyclohexane oxide, epoxidized castor oil and compounds made by reacting epoxy monomers or epoxy prepolymers with hydroxyl terminated polymers.

4,316,968

MODIFIED PHENOLIC ALDEHYDE RESIN TO PRODUCE AN IMPROVED ADHESIVE COATING AND METHOD OF MAKING SAME

Mikhail M. Girgis, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 956,455, Oct. 31, 1978, Pat. No. 4,246,144. This application Jun. 8, 1979, Ser. No. 46,895

Int. Cl.[3] **C08L** *61/12, 61/14, 9/08, 61/06*

U.S. Cl. 525—135 **3 Claims**

1. In a process for producing a coating composition containing a resorcinolic or resorcinolic and phenolic aldehyde resin and an elastomeric latex or elastomeric latices, the improvement comprising:

a. reacting the phenolic compound selected from the group consisting of resorcinol, or a mixture of resorcinol and phenol with aldehyde and urea, wherein urea has the formula

$$H_2N{-}\overset{\overset{O}{\|}}{C}{-}NH_2$$

or thiourea, or thionamide having one to six carbon atoms, or mixture thereof in amounts to give a mole ratio of resorcinolic or resorcinolic and phenolic compound to aldehyde in the range of about 0.2 to about 2.0 and a mole ratio of resorcinolic or resorcinolic and phenolic compound to urea, thiourea, thionamide or mixture thereof in the range of about 0.2 to about 2.0 and a mole ratio of urea, thiourea, thionamide or mixture thereof to the aldehyde in the range of about 0.5 to about 5.0 at an acidic pH and at a temperature in the range of about 0° C. to about 100° C. for a period of time in the range of about 1 hour to about 20 hours, and

b. adjusting the pH of the reaction mixture within the range of about 7 to about 7.5 to produce a randomly modified thermoplastic resorcinolic or resorcinol and phenolic aldehyde resin with slight crosslinking.

4,316,969
CURED NOVOLAK FIBER-REINFORCED, CHLORINATED RUBBER MOLDED ARTICLES HAVING EXCELLENT FLAME-PROOFNESS, AND PROCESS FOR THE PREPARATION THEREOF

Hiroaki Koyama; Shigeo Shimizu, both of Osaka, and Mituru Sekiya, Tokyo, all of Japan, assignors to Nippon Kynol Incorporated, Osaka, Japan

Filed Jul. 2, 1979, Ser. No. 55,191
Int. Cl.³ C08L *11/00, 15/02, 23/28, 61/04*
U.S. Cl. 525—145 **15 Claims**

1. A cured novolak fiber-reinforced, chlorine-containing rubber-molded article, the main components of which are

(A) fibers or a fibrous structure containing at least 50 weight % of cured novolak fibers and

(B) a rubber composition consisting essentially of chlorine-containing rubber containing 15 to 50 weight % of chlorine as a rubber component, which is vulcanized with a non-sulfur vulcanizing agent,

the content of said fibers or fibrous structure being 2–80% by weight of the molded article.

11. A process for preparing a cured novolak fiber-reinforced, chlorine-containing rubber article comprising

contacting a rubber composition consisting essentially of a chlorine-containing rubber which contains 15–50 weight % of chlorine as a rubber component with fibers or a fibrous structure containing at least 50 weight % of cured novolak fibers, and

pressing or molding the resultant composition before, during or after vulcanizing said chlorine-containing rubber composition with a non-sulfur vulcanizing agent at a temperature of 100°–200° C.

4,316,970
BLENDS OF BUTENE-1-ETHYLENE COPOLYMER AND POLYPROPYLENE

Patrick M. Hughes, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 1, 1980, Ser. No. 174,482
Int. Cl.³ C08L *23/20, 23/12*
U.S. Cl. 525—240 **4 Claims**

1. A film or sheets consisting essentially of a blend of about 92–94% by weight of an isotactic butene-1-ethylene copolymer containing 0.5 to 10 mole percent of ethylene and about 6–8% by weight of isotactic polyproylene.

4,316,971
MODIFIED MONOOLEFIN COPOLYMER ELASTOMER WITH IMPROVED HEAT AND OIL RESISTANCE

Yong S. Rim, Woodbridge; John A. Davison, Southington, and Walter Nudenberg, Newtown, all of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 17,298, Mar. 5, 1979, abandoned. This application May 21, 1979, Ser. No. 40,784
Int. Cl.³ C08F *255/04, 255/06*
U.S. Cl. 525—310 **2 Claims**

1. A mixed copolymerizate vulcanizable to an elastomeric state characterized by heat and oil resistance, comprising:

(A) a rubbery spine which is an elastomeric copolymer of ethylene with a higher alpha-monoolefin having the formula $CH_2{=}CHR$ wherein R is an alkyl radical having one to four carbon atoms, with or without a copolymerizable non-conjugated diene, said rubbery spine having an iodine number not greater than 20 and a Mooney viscosity ML-4 of less than 100 at 100° C.;

(B) acrylic ester type monomeric material in an amount sufficient to provide an ester group (—COO—) content in the mixed copolymerizate of from 25 to 40% by weight comprising:

(a) alkyl acrylate monomeric material made up of lower alkyl acrylate monomers in which the alkyl group has from 1 to 4 carbon atoms;

(b) 0 to 20 parts, per 100 parts by weight of lower alkyl acrylate (a), of a higher alkyl acrylate or methacrylate monomer in which the alkyl group has from 5 to 12 carbon atoms; and

(C) 2 to 15 parts, per 100 parts by weight of the rubber spine (A), of at least one additional different ethylenically unsaturated monomer which serves to enhance the vulcanizability of the copolymerizate, the said (B) and (C) being graft copolymerized in the presence of the rubber spine (A), in which (a) is a mixture of methyl acrylate with another lower alkyl acrylate whose homopolymer has a Tg of less than 0° C.,

the "B" gel content of the unvulcanized copolymerizate being less than 40% by weight, measured in xylene at 135° C.,

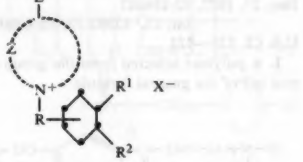
and (C) being selected from the group consisting of methoxyethyl acrylate, ethoxyethyl acrylate, n-butoxyethyl acrylate, butoxyethoxylethyl acrylate, glycidyl acrylate, furfuryl acrylate, tetrahydrofurfuryl acrylate, phenoxyethyl acrylate, N,N-dimethylaminoethyl acrylate N,N-diethylaminoethyl acrylate, 2-chloroethyl acrylate, 3-chloroethyl acrylate, 2-cyanoethyl acrylate, allyl acrylate, methallyl acrylate, the methacrylate analogs of the aforementioned acrylates, allyl glycidyl ether, allyl maleate, allyl fumarate, allyl phthalate, butadiene, isoprene, 4-vinylcyclohexene, dicyclopentadiene, ethylidene norbornene, 1,4-hexadiene, 1,5-hexadiene, vinyl acetate, 2-chloroethyl vinyl ether, vinyl benzyl chloride, vinyl alpha-chloroacetate, and acrylic acid.

4,316,972
POLYMERS FROM NITROGEN HETEROCYCLIC COMPOUNDS

Karel L. Petrak, North Harrow, England, assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 950,213, Nov. 13, 1978, Pat. No. 4,229,515. This application May 15, 1980, Ser. No. 150,038
Int. Cl.³ C08F *8/34, 8/32;* **G03C** *5/54;* **C08F** *8/42*
U.S. Cl. 525—336 **1 Claim**

1. A water-soluble polymer comprising a recurring unit of the formula:



wherein:

L is selected from the group consisting of a single bond and a bivalent linking group;

Z represents the atoms necessary to complete a heterocyclic nucleus;

R is selected from the group consisting of a single bond and alkylene;

R^1 is selected from the group consisting of OH, COOH, NHR^4, $NHCOR^3$, $NHSO_2R^5$, $C(R^4){=}O$, $C(R^4){=}NR^5$ and SO_2NHR^4; and R^2 is selected from the group consisting of COOH, $C(R^4){=}O$, $C(R^4){=}NR^5$ and SO_2NHR^4; wherein R^3 is alkyl, R^4 is H or alkyl, R^5 is OH, NHR^6, alkyl, aryl or substituted aryl, and R^6 is aryl or $CONH_2$; and

X^- is an anion.

4,316,973

NOVEL TELECHELIC POLYMERS AND PROCESSES FOR THE PREPARATION THEREOF

Joseph P. Kennedy, Akron, Ohio, assignor to The University of Akron, Akron, Ohio

Filed Sep. 10, 1979, Ser. No. 73,789
Int. Cl.³ C08F *8/26, 10/10*
U.S. Cl. 525—335 **6 Claims**

1. A novel telechelic polymer formed from an inifer and a cationically polymerizable olefin monomer having from about 4 to about 12 carbon atoms, said polymer having a residue of said inifer in the backbone thereof and carrying at least two terminal unsaturations;

said inifer selected from compounds having the following formula: AY_n, where A is selected from the group consisting of condensed and noncondensed aromatic compounds having from 1 to 4 rings, and linear and branched aliphatic compounds having from 3 to 20 carbon atoms, where Y is represented by the following formula:

where R and R′ are selected from the group consisting of hydrogen, methyl, and phenyl, and R and R′ can be the same when A is an aromatic compound, or where R or R′ is phenyl when A is an aliphatic compound;

where X is a halogen selected from the group consisting of fluorine, chlorine, and bromine, and where n is an integer from 2 to 6.

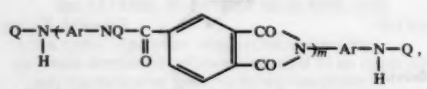
4,316,974

POLYMERS FOR USE IN HEAT RESISTANT PHOTORESIST COMPOSITION AND PROCESS FOR PREPARING THE SAME

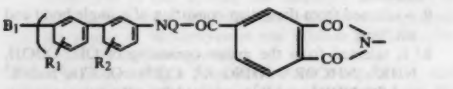
Kaoru Ohmura; Ichiro Shibasaki, and Takeo Kimura, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 961,462, Nov. 16, 1978, Pat. No. 4,208,477. This application Dec. 17, 1979, Ser. No. 104,050
Claims priority, application Japan, Dec. 26, 1977, 52-155610; Dec. 27, 1977, 52-156687
Int. Cl.³ C08G *73/10*; C08F *8/00*
U.S. Cl. 525—422 **5 Claims**

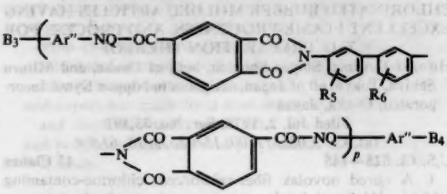
1. A polymer selected from the group consisting of a polymer (α) of the general formula



a polymer (β) of the general formula



a polymer (γ) of the general formula

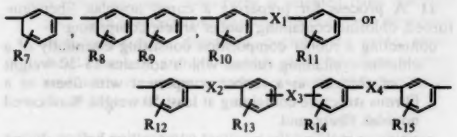


and mixtures thereof

wherein

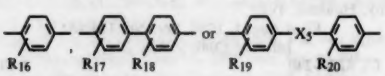
R_1 to R_6 are the same or different and each represent a hydrogen atom, a (C_1–C_4) alkyl group or a halogen atom,

Ar represents



wherein R_7 to R_{15} are the same or different and each have the same meaning as defined with respect to R_1 to R_6 and X_1 to X_4 are the same or different and each represent —O—, —SO_2—, —CH_2—, —CO—, —COO—, —$C(CH_3)_2$—, —S— or —$(CH_2)_2$—,

Ar′ represents



wherein R_{16} to R_{20} are the same or different and each have the same meaning as defined with respect to R_1 to R_6 and X_5 has the same meaning as defined with respect to X_1 to X_4,

Ar″ has the same meaning as defined with respect to Ar or Ar′,

B_1 to B_4 are the same or different and each represent —NCO or a substituent (A) formed by the reaction of —NCO with acrylic acid, methacrylic acid, a hydroxy acrylate or a hydroxy methacrylate, Q independently represents a hydrogen atom or a substituent (A′), provided that each of the rates of substituent introduction into the molecules of the polymers (α), (β) and (γ) as defined by the formulae

$$\frac{\text{number of substituent } (A') \text{ in the molecule}}{m+2} \times 100,$$

$$\frac{\text{number of substituents } (A) + (A') \text{ in the molecule}}{2 \times n + 2} \times 100 \text{ and}$$

$$\frac{\text{number of substituents } (A) + (A') \text{ in the molecule}}{2 \times p + 2} \times 100$$

with respect to the polymer (α), the polymer (β), and the polymer (γ), respectively, is 0.1 to 20%, said substituent; (A′) being a member selected from residual groups of acrylic acid chloride, methacrylic acid chloride, glycidyl acrylate and glycidyl methacrylate, said residual groups being introduced alone or in combination, and

m, n and p are integers corresponding to reduced viscosities of 0.1 to 2.0 with respect to the polymer (α), the polymer (β), and the polymer (γ), respectively.

4,316,975

TITANIUM TRICHLORIDE CATALYTIC COMPONENT AND METHOD FOR HOMO- OR COPOLYMERIZATION OF α-OLEFIN

Yoshikazu Takahashi, Hikari; Shizuo Tomiyashu, and Masaru Takitani, both of Shinnanyo, all of Japan, assignors to Toyo Stauffer Chemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 14,284, Feb. 22, 1979, abandoned, which is a division of Ser. No. 925,695, Jul. 18, 1978, Pat. No. 4,222,894. This application Jul. 3, 1980, Ser. No. 165,808
Claims priority, application Japan, Aug. 31, 1977, 52/104349
Int. Cl.³ C08F 4/64
U.S. Cl. 526—142 15 Claims

1. A method for carrying out either homopolymerization or co-polymerization of α-olefin in the presence of a catalyst system consisting of an organo-aluminum compound and a titanium trichloride catalytic component which is manufactured by pulverizing an eutectic mixture or a crystalline compound consisting of titanium trichloride and aluminum chloride or a pulverized matter obtained therefrom, together with 2–20 parts by weight per 100 parts of said eutectic mixture, crystalline compound or matter obtained therefrom, of an organic compound selected from the group consisting of a carboxylic acid and an anhydride thereof at a temperature within the range of 35°–100° C. in the absence of a solvent and without an extractive process carried out with such a solvent, said method comprising contacting a reactant comprising α-olefin with said catalyst system at a temperature and pressure and for a time effective for forming a homo- or co-polymerized α-olefin.

4,316,976

PREPARATION OF POLYVINYL HALIDE WITH QUATERNARY SALT OF CELLULOSE SULFATE

James A. Wingrave, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

Filed Dec. 11, 1980, Ser. No. 215,286
Int. Cl.³ C08F 2/20, 14/06
U.S. Cl. 526—200 3 Claims

1. An improved process for preparing polyvinyl chloride by suspension polymerization of vinyl chloride monomer, said process resulting in a product having improved bulk density, said improvement comprising adding an effective amount, in the range of about 0.005 to about 1.0 part per 100 parts of vinyl chloride monomer, to the reaction admixture prior to polymerization, of a quaternary ammonium salt of cellulose sulfate, the quaternary ammonium group of said quaternary ammonium salt of cellulose sulfate containing at least 16 carbon atoms and said cellulose sulfate is characterized as follows:

(a) is an undegraded cellulose sulfate,

(b) has a degree of substitution of about 2.0 or higher,

(c) has a viscosity of 20 cps or higher at 1.0 weight percent concentration in an aqueous media as measured by a Brookfield Synchro-Lectric Viscometer, Model LVF at 60 rpm and a temperature of 25° C., and

(d) is further characterized as reactive with potassium ions to form a thermoreversible gel.

4,316,977

COPOLYMER OF MALEIC ANHYDRIDE, DICYCLOPENTADIENE AND VINYLCYCLOHEXENE AND ITS USE AS ANIONIC PAPER SURFACE SIZING MATERIAL

Fritz Gude, Herne; Herbert Haferkorn, Bottrop, and Felix Schülde, Wulfen, all of Fed. Rep. of Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Kreis Recklinghausen, Fed. Rep. of Germany

Filed Oct. 1, 1980, Ser. No. 192,853
Int. Cl.³ C08F 222/06
U.S. Cl. 526—272 5 Claims

1. A random solid terpolymer of maleic anhydride, dicyclopentadiene, and a vinylcyclohexene, useful as a paper size.

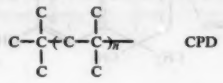
4,316,978

SYNTHESIS OF SUBSTITUTED CYCLOPENTADIENES AND CYCLOPENTADIENE-FUNCTIONALIZED POLYMERS

Joseph P. Kennedy, 952 Genesee Rd., Akron, Ohio 44303, and Kenneth F. Castner, 2365 Cooledge Ave., Akron, Ohio 44305

Division of Ser. No. 121,413, Feb. 14, 1980, Pat. No. 4,246,373, which is a division of Ser. No. 962,048, Nov. 20, 1978, Pat. No. 4,210,737. This application Aug. 25, 1980, Ser. No. 181,095
Int. Cl.³ C08F 8/18, 8/20, 8/26, 8/42
U.S. Cl. 526—348.7 3 Claims

1. A composition comprising a polyisobutylene containing a terminal cyclopentadienyl group of the formula:



wherein n ranges from about 25 to about 25,000.

4,316,979

INSULATING GLASS SEALANT AND RELATED COMPOSITIONS

Henry N. Paul, 3rd, Philadelphia, Pa., assignor to Thiokol Corporation, Newtown, Pa.

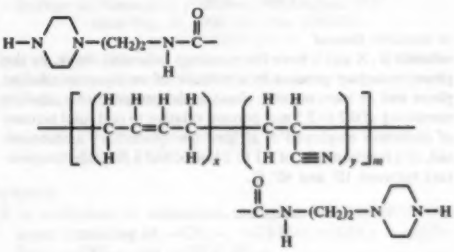
Continuation of Ser. No. 96,714, Nov. 21, 1979, abandoned, which is a continuation of Ser. No. 953,825, Oct. 23, 1978, abandoned. This application Aug. 11, 1980, Ser. No. 176,940
Int. Cl.³ C08L 63/00
U.S. Cl. 528—109 6 Claims

1. A composition comprising

(a) from about 10% to about 50% of a liquid thiol terminated polysulfide polymer having a molecular weight of at least about 1000;

(b) from about 10% to about 50% of a liquid epoxy resin; and

(c) from about 30% to about 70% of a liquid amine terminated polymer containing on average from about 1.7 to about 4 amine groups and having the structure



wherein x is about 5, y is about 1 and m is about 10.

4,316,980

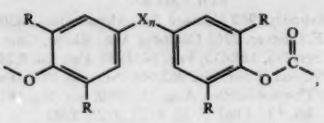
PROCESS FOR THE PREPARATION OF TETRAMETHYLATED BISPHENOL POLYCARBONATES

Karsten Idel; Volker Serini; Dieter Freitag, and Gerd Fengler, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

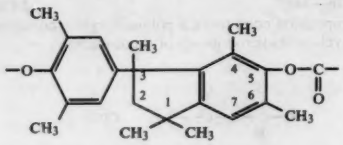
Filed Jan. 14, 1980, Ser. No. 112,031
Claims priority, application Fed. Rep. of Germany, Jan. 17, 1979, 2901665
Int. Cl.³ C08G 63/62
U.S. Cl. 528—199 9 Claims

1. A process for the preparation of a thermoplastic aromatic polycarbonate having a degree of polymerization of at least 30

comprising recurring structural units selected from the group consisting of



I.



II.

and mixtures thereof

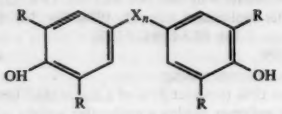
wherein

R denotes C_1 alkyl,

X denotes C_1–C_5 alkylene, C_2–C_5 alkylidene, cyclohexylene, cyclohexylidene, —O—, or —S—, and

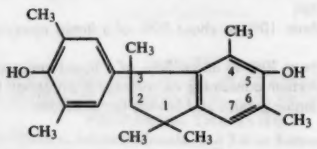
n is either 0 or 1,

comprising reacting at least 80 mol percent, relative to the total molar amount of diphenols, of a diphenol of the formula



III.

or



IV.

or mixtures thereof

wherein R, X and n have the meanings indicated above, by the phase boundary process in a mixture of an aqueous alkaline phase and an inert organic phase in the presence of a catalyst consisting of 0.2 to 2.5 mol percent relative to said total amount of diphenols employed of at least one quaternary ammonium salt, at a reaction time of 0.1 to 2 hours, and a reaction temperature between 10° and 40° C.

4,316,981

POLYCARBONATE TRANSESTERIFICATION

Daniel J. Brunelle, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 13, 1980, Ser. No. 159,051

Int. Cl.³ C08G *63/62*

U.S. Cl. 528—199 **8 Claims**

1. An improved transesterification process wherein a bis(ortho-nitroaryl)carbonate and a dihydric phenol are reacted to form a high molecular weight polycarbonate under transesterification reaction conditions, the improvement comprising the use of a hypernucleophilic base which comprises a nitrogen ring containing heterocyclic aromatic compound having at least one electron releasing group directly bonded to a carbon atom in the aromatic ring structure of the aromatic compound, wherein the mole ratio of said base to said dihydric phenol is within the range of from 1×10^{-5}:1 to 1:1.

4,316,982

PROCESS FOR REDUCING THE VISCOSITY OF CELLULOSE ETHERS BY MEANS OF OZONE AND APPLICATION THEREOF

Arno Holst, Wiesbaden, and Eberhard Perplies, Walluf, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 23, 1980, Ser. No. 142,883

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1979, 2917104

Int. Cl.³ C08B *11/20*

U.S. Cl. 536—88 **4 Claims**

1. A process for reducing the viscosity of cellulose ethers by reacting a water-soluble cellulose ether with ozone in the presence of water, wherein said cellulose ether which is moist with water and has a dry content of from 40 to 75% by weight is reacted with an ozone/oxygen mixture or with an ozone/air mixture at a temperature of about 0° to 60° C.

4,316,983

NEOPLASMIC COMPOUNDS: SUGAR ESTERS AND GLYCOSIDES

Werner Bollag, Basel, and Pierre-Charles Wyss, Muttenz, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

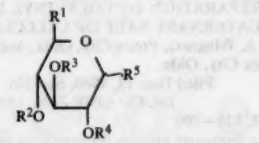
Filed Jun. 12, 1980, Ser. No. 158,678

Claims priority, application Switzerland, Jun. 21, 1979, 5808/79

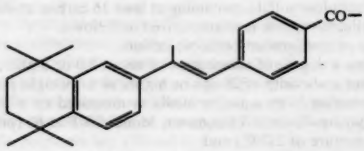
Int. Cl.³ C07H *15/20, 13/08*

U.S. Cl. 536—4 **9 Claims**

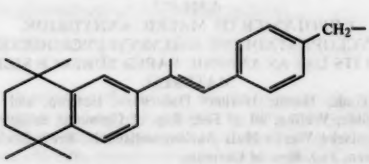
1. Compounds of the general formula:



where R^1 represents a group of the formula —CH_2OH, —CH_2OR^6, —COR^7 or —$CONH_2$; R^2 represents hydrogen or lower alkanoyl; R^3 and R^4 represent hydrogen or lower alkanoyl or a group R^6; R^5 represents lower alkoxy or a group of the formula OR^6 or OR^8; R^6 represents a group of the formula:



R^7 represents hydroxy, lower alkoxy or OM in which M represents a cation; and R^8 represents a group of the formula:



providing that: (i) R^1 represents a group of the formula —CH_2OR^6, R^2 represents hydrogen and one of R^3 and R^4 hydrogen and the other represents a group R^6 when R^5 represents lower alkoxy; (ii) R^1 represents a group of the formula —COR^7 and

R^2, R^3 and R^4 represent lower alkanoyl when R^5 represents a group of the formula OR^6; or (iii) R^1 represents a group of the formula $—CH_2OH$, $—COR^7$ or $—CONH_2$ and R^2, R^3 and R^4 represent hydrogen of lower alkanoyl when R^5 represents a group of the formula OR^8; and the pharmaceutically acceptable acid addition salts thereof.

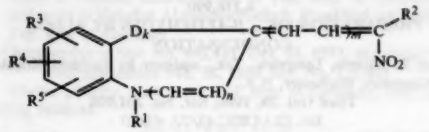
4,316,984

THERMOLABILE ACUTANCE DYES

Harvey A. Brown, Lake Elmo, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 964,480, Nov. 29, 1978, Pat. No. 4,260,676.
This application Jun. 27, 1980, Ser. No. 163,528
Int. Cl.³ C07D 215/12
U.S. Cl. 546—165 **6 Claims**

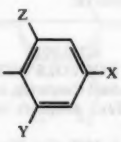
1. A dye of the formula



wherein

R^1 is an alkyl group of from 1 to 12 carbon atoms,

R^2 is the group



wherein X, Y, and Z are independently selected from the class consisting of H, NO_2, CN, perfluoroalkyl of 1 to 4 carbon atoms and halogen, with the proviso that at least one of X and Y is NO_2,

R^3, R^4, and R^5 are independently selected from the group consisting of H, halogen, alkyl or alkoxy of 1 to 4 carbon atoms, alkenyl of 2 to 4 carbon atoms, $—CH_2—_pCOOH$ wherein p is 0, 1, 2, or 3, $—NO_2$, $—NH_2$, or $—NH-COCH_3$, or any two of the adjacent groups are the atoms necessary to form a fused on benzene ring,

D represents $—HC{=}CH—$, O, $>C(CH_3)_2$, —S—, —Se—, or $>NR^7$,

R^7 represents an alkyl group of 1 to 4 carbon atoms or $CH_3CO—$,

n is 1 when k is 0 and k is 1 when n is 0,

and m is 0, 1, 2, or 3.

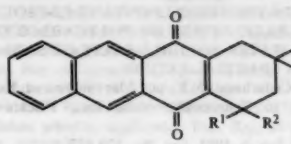
4,316,985

CYCLIC COMPOUNDS

Michael J. Broadhurst, Baldock; Cedric H. Hassall, Welwyn, and Gareth J. Thomas, Luton, all of Great Britain, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

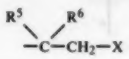
Filed Jan. 11, 1980, Ser. No. 111,348
Claims priority, application United Kingdom, Jan. 16, 1979, 1537/79; Jul. 26, 1979, 26151/79
Int. Cl.³ C07C 50/22; C07D 317/72, 339/06
U.S. Cl. 549—39 **5 Claims**

1. The compound of the formula



I

wherein one of R^1 and R^2 represents a hydrogen atom and the other represents a hydroxy group or R^1 and R^2 together represent an ethylene ketal or ethylene thio ketal group, R^3 represents a hydrogen atom or a hydroxy or lower alkanoyloxy group and R^4 represents a lower alkyl or lower alkoxycarbonyl or benzyloxycarbonyl group or a group of the formula



a

in which R^5 and R^6 together form an oxo group or an ethylene ketal or ethylene thio ketal group and X represents a hydrogen atom or a hydroxy or lower alkanoyloxy group, or

$$—(CH_2)_n—OY$$ b

in which n stands for 1 or 2 and Y represents a hydrogen atom or lower alkyl or lower alkanoyl group, with the proviso that R^1 and R^2 together represent an ethylene ketal or ethylene thio ketal group when R^3 represents an acetoxy group and R^4 represents an acetyl group.

4,316,986

PREPARATION OF DIFLUOROMALONYL FLUORIDE

David C. England, Wilmington; Robert L. Kraft, Newark, and Carl G. Krespan, Wilmington, all of Del., assignors to E. I. DuPont de Nemours & Company, Wilmington, Del.

Filed Sep. 23, 1980, Ser. No. 189,827
Int. Cl.³ C07C 67/14
U.S. Cl. 560—184 **10 Claims**

1. A carboxylic ester/acyl fluoride interchange reaction process comprising the sequence:

$$RX—CO_2CH_3 + R'X'—COF \overset{catalyst}{\rightleftharpoons} RX-COF + R'X'CO_2CH_3$$

wherein

X is methylene or substituted methylene selected from the group consisting of $—CF_2—$, —CFH—, —CFCl—, —CFBr—, —CFI—, and $—C(CF_3)F—$;

X′ is substituted methylene selected from the group consisting of $—CF_2—$, —CFH—, —CFCl—, —CFBr—, —CFI—, and $—C(CF_3)F—$;

R and R′ are the same or different and are selected from the group consisting of hydrogen, halogen, and halogen-substituted and unsubstituted alkyl, alkoxy, alkaryl, aralkyl, aryloxy and polyether alkyl of up to 18 carbon atoms;

R and X taken together can be R_FCOF;

R′ and X′ taken together can be $R_FCO_2CH_3$; and

R_F is a single bond or a linear or branched perfluoroalkylene group of up to 18 carbon atoms;

and wherein the catalyst is one or more metal fluorides selected from the group consisting of SbF_5, TaF_5, NbF_5, AsF_5, BiF_5, TiF_4, ZrF_4 and mixtures of SbF_5 and HF wherein $HSbF_6$ is present, and combinations of one or more of said metal fluorides with one or more strong sulfonic acids.

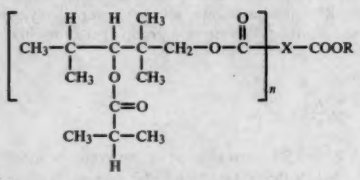
4,316,987

PARTIAL (2,2,4-TRIMETHYLPENTANE-1,3-DIOL MONOISOBUTYRATE) ESTERS OF POLYCARBOXYLIC ACIDS AND WATER-SOLUBLE SALTS OF SAID PARTIAL ESTERS

Mario Q. Ceprini, Cedarhurst, N.Y., and Marvin Warren, Koral, N.J., assignors to TennecoChemicals, Inc., Piscataway, N.J.

Filed Jan. 9, 1981, Ser. No. 223,875
Int. Cl.³ C07C *69/40, 69/44, 69/593, 69/60*
U.S. Cl. 560—199 **10 Claims**

1. A compound having the structural formula



wherein X represents the residue of an aliphatic polycarboxylic acid having 2 to 4 carboxyl groups and 4 to 20 carbon atoms, n is a number in the range of 1 to 3, and R represents hydrogen, ammonium, amine, or alkali metal.

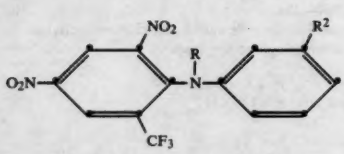
4,316,988

N-ALKYLDIPHENYLAMINES

Albert J. Clinton, deceased, late of Marion, Ind. by Thomas L. Plimpton, administrator, and George O. P. O'Doherty, Greenfield, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 706,023, Jul. 21, 1976, abandoned. This application Dec. 24, 1980, Ser. No. 219,791
Int. Cl.³ C07C *87/54, 87/60, 87/62*
U.S. Cl. 564—433 **3 Claims**

1. A compound of the formula



wherein R represents methyl, ethyl, or propyl; and R^2 represents trifluoromethyl.

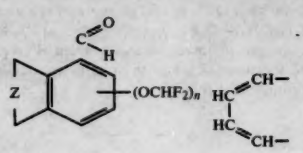
4,316,989

PROCESS FOR PREPARING DIFLUOROMETHOXY DERIVATIVES OF AROMATIC ALDEHYDES

Jury A. Fialkov, ulitsa Oktyabrskoi Revoljutsii, 13/4, kv. 3, and Svetlana V. Shelyazhenko, ulitsa Borschagovskaya, 10-a, kv. 141, both of Kiev, U.S.S.R.

Filed May 29, 1980, Ser. No. 154,596
Int. Cl.³ C07C *45/61*
U.S. Cl. 568—433 **6 Claims**

1. A process for preparing difluoromethoxy derivatives of aromatic aldehydes having a common formula:



where Z is H,H; or
n is 1 or 2,
said process comprising reacting a hydroxy derivative of an aromatic aldehyde selected from the group consisting of monohydroxy derivatives of aromatic aldehydes and dihydroxy derivatives of aromatic aldehydes, with difluorochloromethane in an aqueous-dioxane medium at a temperature of 60° to 70° C., in the presence of 6 to 10 moles of caustic alkali per 1 mole of a starting hydroxyaldehyde.

4,316,990

PREPARATION OF α,β-ALDEHYDES BY ALDOL CONDENSATION

Don L. Morris, Longview, Tex., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 29, 1980, Ser. No. 201,954
Int. Cl.³ C07C *45/72, 47/20*
U.S. Cl. 568—461 **15 Claims**

1. An aldol condensation process for preparing α,β-unsaturated aliphatic aldehydes comprising passing an aliphatic saturated aldehyde containing 2 to 8 carbon atoms at a temperature of about 100° C. to about 300° C. over an anatase form titanium dioxide catalyst.

4,316,991

MODIFICATION OF POLYOLS WITH EPOXY RESINS

George P. Speranza; Michael Cuscurida, and Robert L. Zimmerman, all of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 2, 1980, Ser. No. 183,543
Int. Cl.³ C08G *18/32, 65/28, 18/14, 18/48*
U.S. Cl. 568—609 **16 Claims**

1. A modified polyol for use in preparing flexible polyurethane foams, the modified polyol being produced by the reaction of an initiator having an active hydrogen functionality of 3 to 4, one or more alkylene oxides and an epoxy resin in such a manner that the epoxy resin is added internally along the length of the polyol chain.

4,316,992

PROCESS FOR POLYOL RECOVERY FROM POLYURETHANE FOAM COMPRISING ALCOHOL AND STEAM HYDROLYSIS

John L. Gerlock, Dearborn; Jacob Braslaw, Southfield, both of Mich., and Jane Albright, Bremerton, Wash., assignors to Ford Motor Company, Dearborn, Mich.

Filed Feb. 23, 1981, Ser. No. 237,027
Int. Cl.³ C07C *43/11*
U.S. Cl. 568—621 **22 Claims**

1. A process for recovery from polyether polyurethane foam of substantially pure polyether polyol which can be used to make new foam, comprising the steps of:

(a) forming a solution by dissolving a polyether polyurethane foam in a saturated alcohol having a boiling point between about 225° C. and about 280° C. at a temperature between about 185° C. and about 220° C. under a non-oxidizing atmosphere;

(b) introducing superheated steam through said solution for a time necessary to substantially hydrolyze dissolution products subject to hydrolysis into amines and alcohol while maintaining said solution temperature between about 185° C. and 220° C. while maintaining reaction

volume through the addition of said saturated alcohol to said solution; and

(c) subjecting at least a portion of said solution to vacuum purification at temperatures below about 230° C. so as to allow recovery therefrom of substantially pure polyether polyol.

4,316,993

PROCESS FOR THE PREPARATION OF 4-PHENOXY-PHENOLS

Emmerich Paszthory, Hofheim am Taunus; Karl G. Seifert, Frankfurt am Main; Vincenz Zimmermann, Nauheim, and Hans J. Nestler, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

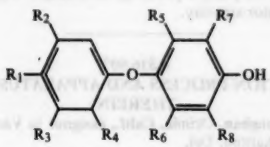
Continuation of Ser. No. 845,431, Oct. 25, 1977, abandoned. This application Feb. 28, 1980, Ser. No. 125,443

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1976, 2648644

Int. Cl.³ C07C *41/26*

U.S. Cl. 568—637 16 Claims

1. In a process for the preparation of a phenol of the formula



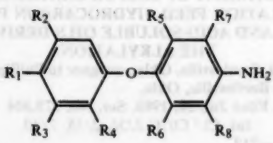
in which

R_1 is hydrogen, halogen, methylthio, cyclopentyl, cyclohexyl, methylcyclohexyl, ethylcyclohexyl or phenyl,

R_2 and R_3, which are the same or different, each is hydrogen, halogen or alkyl of from 1 to 4 carbon atoms,

R_4 is hydrogen, halogen, alkyl of from 1 to 4 carbon atoms, cyclopentyl or cyclohexyl or R_3 and R_4 together are —CH=CH—CH=CH—, and

R_5, R_6, R_7 and R_8, which are the same or not all the same, each is hydrogen or alkyl of from 1 to 4 carbon atoms, by diazotizing an aniline of the formula



and decomposing the diazonium compound, the improvement which comprises diazotizing by introducing said aniline into aqueous sulfuric acid of a concentration of from 60 to 75% by weight and then adding sodium nitrite thereto; and decomposing diazonium compound which is a product of the diazotization by combining said compound with a preheated mixture, the temperature of which is maintained in the range of from 115° to 130° C., of aqueous sulfuric acid of substantially the same concentration as above and a water-immiscible solvent capable of dissolving said phenol.

4,316,994

PREPARATION OF 4-FLUORO-3-PHENOXY-TOLUENE

Rainer Fuchs; Fritz Maurer, both of Wuppertal; Uwe Priesnitz, Unna-Massen, and Hans-Jochem Riebel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

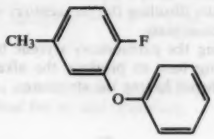
Filed Jul. 18, 1980, Ser. No. 170,194

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1979, 2932093

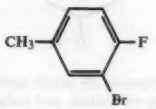
Int. Cl.³ C07C *41/01*

U.S. Cl. 568—639 8 Claims

1. In the preparation of 4-fluoro-3-phenoxy-toluene of the formula



by reacting a 3-bromo-4-fluoro-toluene of the formula



with an alkali metal or alkaline earth metal phenolate in the presence of copper as catalyst and in the presence of a diluent at a temperature between about 100° and 200° C., the improvement which comprises employing isoquinoline as the diluent and effecting the reaction in the presence of an alkali metal or alkaline earth metal carbonate.

4,316,995

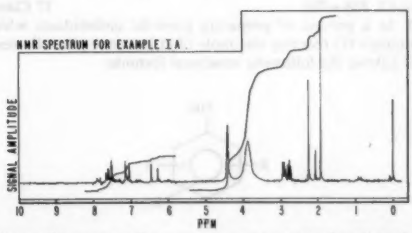
PROCESS FOR PREPARING VINYL PHENOL

Alan O. Pittet, Atlantic Highlands, and Ranya Muralidhara, Fair Haven, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Feb. 5, 1981, Ser. No. 231,776

Int. Cl.³ C07C *39/06, 39/18*

U.S. Cl. 568—780 9 Claims

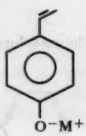


1. In the process for preparing paravinyl phenol in food grade form of food grade quality comprising the steps, in sequential order, of:

(i) intimately admixing malonic acid and parahydroxybenzaldehyde in the presence of ethylenediamine, dimethyl formamide and an inert solvent while heating the reaction mixture at reflux thereby forming a first reaction product located within a first reaction mass;

(ii) removing water of reaction from the first reaction mass while simultaneously heating the said first reaction mass at a refluxing temperature;

(iii) removing the solvent from the first reaction mass;
(iv) decarboxylating the resulting first reaction product by heating the reaction product to a temperature in the range of 115°–120° C. thereby forming a second reaction product;
(v) dissolving in water and extracting with a lower alkyl ester the reaction product; and
(vi) stripping the solvent from the reaction product to yield a second reaction mass which comprises paravinyl phenol;
the improvement of which consists essentially of the additional steps of:
(vii) admixing acetic anhydride and dilute aqueous base with the resulting second reaction products to form paraacetoxy styrene from the paravinyl phenol contained in said second reaction mass;
(viii) fractionally distilling the paraacetoxy styrene from the second reaction mass;
(ix) hydrolyzing the paraacetoxy styrene by mixing therewith a strong base to produce the alkali metal salt of paravinyl phenol having the structure:



wherein M represents an alkali metal selected from the group consisting of sodium and potassium thereby forming a third reaction mass;
(x) adding dilute aqueous acid to the resulting third reaction mass whereby crystalline paravinyl phenol precipitates; and
(xi) separating the resulting precipitate from the resulting solution,
the solvent being used in conjunction with the step of intimately admixing malonic acid and parahydroxy benzaldehyde consisting essentially of cyclohexane.

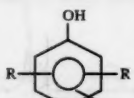
4,316,996

DISCOLORATION PREVENTION OF PHENOLIC ANTIOXIDANTS

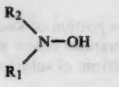
Jacques H. Collonge, Les Ulis, France, and Hans Widmer, Bottmingen, Switzerland, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Nov. 17, 1980, Ser. No. 207,111
Int. Cl.³ C07C *37/11, 29/94, 39/06*
U.S. Cl. 568—784 **17 Claims**

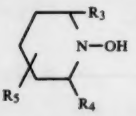
1. In a process of preparing phenolic antioxidants which comprises (1) reacting one mole of at least one phenolic reactant having the following structural formula:



wherein R is selected from the group consisting of hydrogen, alkyl radicals having from 1 to 20 carbon atoms, cycloalkyl radicals having from 6 to 20 carbon atoms, and aralkyl radicals having from 6 to 20 carbon atoms, with (2) at least one tertiary olefin having from 4 to 9 carbon atoms at a temperature of from 50° C. to 150° C. in the presence of a catalyst; then (3) the catalyst is neutralized with an aqueous solution and (4) the reaction mixture is heated under vacuum to remove volatiles and filtered hot; the improvement is characterized in that (A) 0.01 to 5 percent by weight of at least one hydroxylamine selected from general formulae (I) and (II).

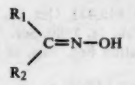


(I)



(II)

wherein R_1 and R_2 are the same or different radicals selected from the group consisting of alkyl radicals of 1 to 18 carbon atoms; and R_3, R_4 and R_5 are the same or different radicals selected from the group consisting of hydrogen and alkyl radicals of 1 to 8 carbon atoms; is added to the solution used to neutralize the catalyst and (B) prior to filtration 0.01 to 5 percent by weight of a substituted oxime of the structural formula (III):



(III)

wherein R_1 and R_2 are defined as above is added to the reaction mixture together with an additional 0.01 to 5.0 percent by weight of at least one hydroxylamine selected from formulae (I) and (II); to yield a phenolic antioxidant with improved color and color stability.

4,316,997

ALKYLATION PROCESS AND APPARATUS USEFUL THEREIN

Ronald J. Vaughan, Orinda, Calif., assignor to Varen Technology, Marshallton, Del.

Continuation-in-part of Ser. No. 660,634, Feb. 23, 1976. This application Aug. 7, 1979, Ser. No. 64,480
Int. Cl.³ C07C *2/66, 2/70*
U.S. Cl. 385—458 **7 Claims**

1. A liquid phase process for the alkylation of an aromatic hydrocarbon with an olefin which comprises contacting said aromatic hydrocarbon and said olefin, at reaction conditions, in the presence of a copolymer of a perfluorovinyl ether and tetrafluoroethylene containing pendant sulfonic acid groups, as catalyst.

4,316,998

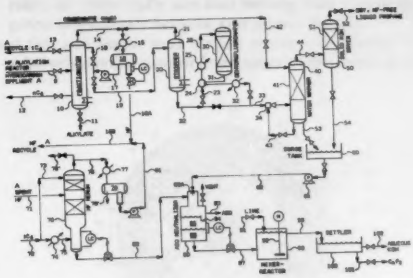
TREATMENT OF SULFUR-CONTAINING HF-ALKYLATION FEED, HYDROCARBON PRODUCT, PROPANE AND ACID-SOLUBLE OILS DERIVED FROM THE ALKYLATION

Joe Van Pool, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 29, 1980, Ser. No. 173,304
Int. Cl.³ C07C *2/56, 2/58, 7/10*
U.S. Cl. 585—712 **8 Claims**

1. A process for the alkylation of an isoparaffin with an olefin which comprises in combination, alkylating an isoparaffin with an olefin in the presence of an HF acid catalyst in an alkylation operation in which an alkylation reaction zone effluent is settled to form a hydrocarbon phase and an acid phase, at least a portion of the acid phase is passed to acid rerun for removal of acid soluble oils, and another portion is recycled for reuse as catalyst, hydrocarbon phase is fractionated to produce an alkylate, saturated hydrocarbon stream containing C_4 hydrocarbons and a propane containing stream also containing hydrogen fluoride, water washing said propane containing stream to substantially completely remove hydrogen

fluoride therefrom, drying said propane stream which now has been substantially completely freed of hydrogen fluoride by contacting said stream with solid caustic, contacting said acid soluble oil with used water wash and aqueous alkaline treating solution obtained from said water washing and from said drying, to remove from said acid soluble oil hydrogen fluoride, contacting the used treating solution upon separation from said acid soluble oil with a neutralizing agent adapted to regenerate aqueous alkaline solution and passing aqueous alkaline solution



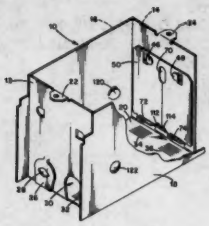
thus obtained to said alkylation operation to therein feed olefin-containing feed fed to said operation.

4,316,999

ELECTRICAL WIRING BOX AND CABLE CLAMP

William Nattel, Montreal, Canada, assignor to GTE Sylvania Canada Limited, Montreal, Canada

Filed Jul. 23, 1980, Ser. No. 171,925
Int. Cl.[3] H02G 3/08
U.S. Cl. 174—65 R 18 Claims



1. An electrical wiring box arrangement comprising:
an electrical wiring box including:
a wall structure defining front-to-rear walls and a rear wall therebetween which in combination define a chamber within the box;
said wall structure having a knock-out region for providing a knock-out opening for receiving non metallic sheathed cable, first attachment means for mounting cable clamp means interior to said box adjacent to said knock-out region, and first cable engaging means; and
a cable clamp means for clamping non-metallic sheathed cable including:
a substantially flat flexible and resilient main body portion having opposite first and second end portions, and first and second flat surfaces; second attachment means in said first end portion for coacting with said first attachment means of said electrical wiring box to attach said cable clamp means to said wall structure; and
cable retaining means comprising a foot portion contiguous with said second end portion of said cable clamp means, said foot portion having first and second surfaces; said first surface of said foot portion subtending a dihedral angle from about 75° to about 90° with said first surface of said main body portion; a heel edge being formed at the vertex of the dihedral angle at the intersection of said second surface of said foot portion and said second surface of said main body portion providing second cable engaging means;
whereby a cable passing through a knock-out opening of an electrical wiring box having said cable clamp means attached to the wall structure thereof, deflects said second end of said cable clamp means inwardly into said chamber securing said cable against removal from said knock-out opening in an outward direction by the action of said first and said second cable engaging means bearing oppositely against said cable.

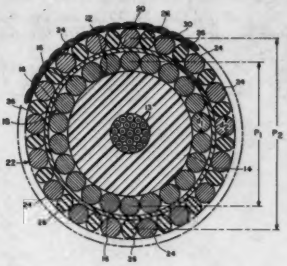
4,317,000

CONTRAHELICALLY LAID TORQUE BALANCED BENTHIC CABLE

Kenneth M. Ferer, Covington, La., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 23, 1980, Ser. No. 171,567
Int. Cl.[3] H01B 7/14, 7/18
U.S. Cl. 174—70 R 10 Claims

1. A torque balanced cable comprising in combination:
a central core means;
an inner strand layer comprising a number of first load bearing strands helically laid about said core means with a predetermined first pitch angle of a first hand and a first pitch diameter;
a composite outer strand layer comprising a number of load bearing second strands helically laid about said inner strand layer with a predetermined second pitch angle substantially equal in magnitude to said first pitch angle but of opposite hand, a second pitch diameter, and a plurality of substantially non-load bearing filler strands disposed alternatively between said second strands;
said first and second load bearing strands being formed of relatively stretch resistant first synthetic fiber material and



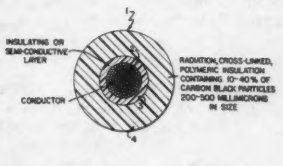
said filler strands being formed of relatively elastically compliant second synthetic fiber material; and
barrier layer means, disposed between said inner and outer strand layers for preventing abrasion therebetween;
said number of first load bearing strands bearing a ratio to said number of second load bearing strands that is substantially porportional to the ratio that said second pitch diameter bears to said first pitch diameter.

4,317,001

IRRADIATION CROSS-LINKED POLYMERIC INSULATED ELECTRIC CABLE

David A. Silver, Livingston; Rudolf G. Lukac, East Brunswick, and Solomon Rubinstein, Fanwood, all of N.J., assignors to Pirelli Cable Corp., Union, N.J.

Continuation of Ser. No. 14,744, Feb. 23, 1979, abandoned. This application Sep. 18, 1980, Ser. No. 188,529
Int. Cl.[3] H01B 3/18
U.S. Cl. 174—102 SC 9 Claims


INSULATING OR SEMI-CONDUCTIVE LAYER
CONDUCTOR
RADIATION CROSS-LINKED, POLYMERIC INSULATION CONTAINING 10-40% OF CARBON BLACK PARTICLES 200-500 MILLIMICRONS IN SIZE

1. An electric cable comprising a conductor and at least one layer of insulating material therearound, said layer comprising a radiation cross-linked, polymeric material with carbon black distributed therein, the amount and particle size of the carbon black which is present in the polymeric material being such that the volume resistivity of said layer of insulating material is at least 1×10^{10} ohm-cm. but carbon black having a particle size in the range from about 200 to about 500 millimicrons being present in the polymeric material in an amount of about 10% to about 40% of the total weight of the polymeric material and the carbon black having a particle size in said range, said insulating layer being distinguished from other insulating layers comprising said radiation cross-linked, polymeric material with carbon black therein in particle sizes and amounts different from particle sizes in said range and in said amount not only by having a resistivity of at least 1×10^{10} ohm-cm. but also by having a greater dielectric strength and a reduction in

at least one of the number and of the size of electron trees therein as compared to such other insulating layers having lesser amounts of said carbon black.

4,317,002

MULTI-CORE POWER CABLE

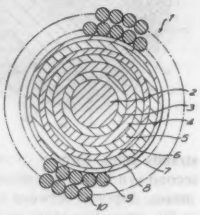
Lyndon R. Spicer, Llandevaud, Wales, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 24, 1979, Ser. No. 87,893

Claims priority, application United Kingdom, Nov. 21, 1978, 45336/78

Int. Cl.³ H01B 7/22

U.S. Cl. 174—105 R **7 Claims**



1. A multi-core power cable comprising:

a central conductor,

a first insulating layer disposed coaxially around said central conductor,

at least one tubular intermediate conductor disposed coaxially around said first insulating layer,

an intermediate insulating layer disposed coaxially around each said intermediate conductor,

an outer tubular conductor disposed coaxially around said intermediate insulating layer,

at least one of said conductors comprising a plurality of stranded wires and interstitial spaces, said interstitial spaces being filled with a flexible material,

said conductors forming cores and being of substantially equal cross-section,

an insulating layer disposed over said outer tubular conductor,

a sheath arranged over said insulating layer, and armouring arranged over said sheath.

4,317,003

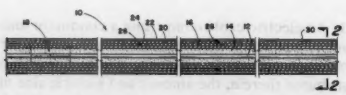
HIGH TENSILE MULTIPLE SHEATH CABLE

Stanley J. Gray, 8502 E. 121st St., Bixby, Okla. 74008

Filed Jan. 17, 1980, Ser. No. 112,933

Int. Cl.³ H01B 7/24

U.S. Cl. 174—106 R **8 Claims**



1. A multiple sheath cable comprising at least one conductor element surrounded by insulation material, a first tubular metal sheath tightly surrounding said insulation material and conductor element, said first metal sheath comprising a plurality of elongated segments longitudinally seam welded having ends thereof butt welded to form spaced splice joints, said joints having diameter substantially equal to the diameter of the first metal sheath, a second tubular metal sheath tightly surrounding said first tubular metal sheath and comprising a plurality of elongated segments longitudinally seam welded and having ends butt welded to form second spaced splice joints, said first and second splice joints being longitudinally staggered for increasing tensile strength of the completed cables and wherein the seam welds of said first and second tubular metal sheaths are radially offset so as not to overlap.

4,317,004

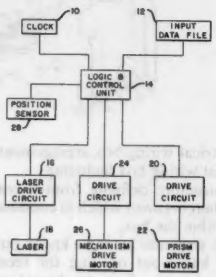
IMAGING AND SCANNING SYSTEM

John W. Reece, Ithaca, N.Y., assignor to NCR Corporation, Dayton, Ohio

Filed Dec. 31, 1979, Ser. No. 108,878

Int. Cl.³ G09F 9/34; H04L 23/00; H04N 1/06

U.S. Cl. 178—15 **5 Claims**



1. An imaging system for recording input information on a photosensitive record medium, comprising a

laser light source,

light guide means comprising a sheet of optical fibers having a predetermined length and arranged in a circle at one end thereof adjacent said light source and unfurled to form a straight line at the other end thereof,

means for sensing a selected one of said optical fibers at said one end thereof for coinciding with and initiating flow of input information to be recorded,

deflective prism means receiving a beam of light in a line from said light source and for directing said light in a radial direction to said one end of said light guide means,

means for driving said deflective prism means in a rotary direction to direct said light in said circle of light guide means, and

means for synchronizing the flow of input information to be recorded with the beam of light emitted from said laser light source and with said means for driving said deflective prism means for generating a row of dots along said line corresponding to input information transmitted during one revolution of said prism means.

4,317,005

POSITION-DETERMINING SYSTEM

Pieter de Bruyne, Probsteistr 79, CH8051 Zurich, Switzerland

Filed Oct. 15, 1979, Ser. No. 84,905

Int. Cl.³ G08C 21/00

U.S. Cl. 178—19 **4 Claims**

1. Position-determining apparatus including

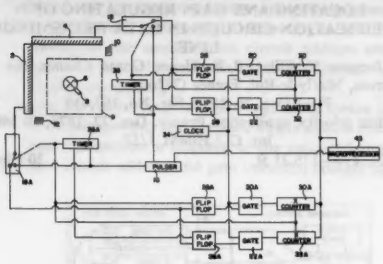
a movable object whose position between maximum and minimum limits is to be determined and which includes a surface capable of reflecting acoustic waves,

transducer means arranged to radiate acoustic waves in the direction of said object and to receive acoustic waves reflected therefrom,

pulse generation means for energizing said transducer to produce acoustic impulses,

a calibration reflector capable of reflecting acoustic waves positioned within the range of said transducer means but outside the maximum and minimum limits of position measurement, and

timing means responsive to impulses received by said transducer means to produce acoustic impulses,



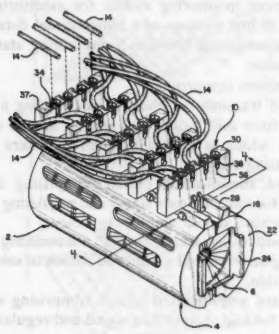
wherein said timing means is operative to measure the relative reception times of pulses reflected from said object and said calibration reflector.

4,317,006

LOAD COIL

Benjamin H. Mosser, III, Middletown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 9, 1980, Ser. No. 157,743
Int. Cl.³ H01F *17/08, 5/04, 41/10*
U.S. Cl. 178—46 **8 Claims**



1. A coil cartridge of the type comprising a cylindrical coil housing, a stack of coils within said coil housing arranged coaxially with the axis of said coil housing, the coil wires of said coils extending from said coils through an axially extending seam in said coil housing to terminal means on the surface of said coil housing, said coil wires being connected to said terminal means, said coil housing having a longitudinally extending hinge which is opposite to said seam to permit placement of said coils in said coil housing when said coil housing is open and to permit subsequent closing of said coil housing so that said coils are contained in said coil housing, said coil cartridge being characterized in that:

said coils have terminal housing means associated therewith, said terminal housing means having a plurality of terminal-receiving cavities extending into said housing from surface portions thereof, each of said cavities having a terminal therein, said terminal in each cavity having a coil wire-receiving slot extending into a first end thereof and a lead wire-receiving slot extending into a second end thereof, said first end of each terminal being at the inner end of its respective cavity, said second end of each terminal being adjacent to said surface portions of said terminal housing, said coil wires extending to, and being received in, said coil wire-receiving slots,

said terminal housing means being originally separated from, and being assembled to, said coil housing, said terminal housing means and said coil housing means having interengaging means serving to maintain said coil housing in its closed condition whereby,

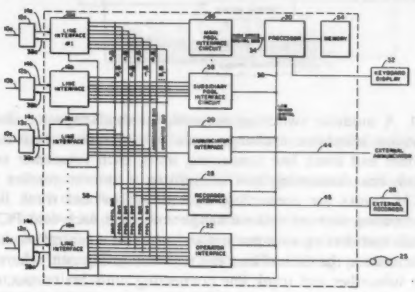
said coil cartridge can be produced by first connecting the ends of said coil wires to terminals in said terminal housing means, thereafter placing said coils in said coil housing, closing said coil housing and engaging said interengaging means.

4,317,007

TELEPHONE-CONFERENCING METHOD AND APPARATUS WITH MONITOR-ONLY ACCESS

John M. Harrison, Epsom, N.H., assignor to Small World Exchange, Inc., Nashua, N.H.

Filed Mar. 23, 1979, Ser. No. 23,164
Int. Cl.³ H04M *3/22, 3/56*
U.S. Cl. 179—18 BC **16 Claims**



1. Caller-initiated telephone conferencing apparatus comprising

caller-responsive input means for concurrently receiving a plurality of incoming telephone line calls over an associated plurality of incoming telephone lines and including means for responding to a signalling indication on any incoming telephone line for conditioning the line for communication, and

switching means responsive to said input means for selectively connecting any of said conditioned incoming lines to any of plural conference groupings wherein any of said incoming lines in a grouping can receive signals from all other incoming lines connected to said grouping and for selectively connecting lines in at least one grouping such that a selected sub-group of the lines only receives messages whereas another sub-group of lines of that grouping both receives and transmits messages.

10. Telephone conferencing apparatus comprising

input means for concurrently receiving a plurality of incoming telephone-line calls over an associated plurality of incoming telephone lines,

switching means for selectively connecting any of said incoming lines to a conference grouping, said switching means being arranged to provide any incoming telephone line in a grouping for receiving signals from all other incoming lines connected to said grouping and to provide selected ones of the lines in a grouping for also transmitting signals to the other lines of that grouping, and wherein said grouping has the capacity of at least three incoming lines,

monitor means operatively responsive to incoming signal energy on each incoming line of a grouping for generating electrical incoming voice-indicative report signals distinct from incoming voice communication, and

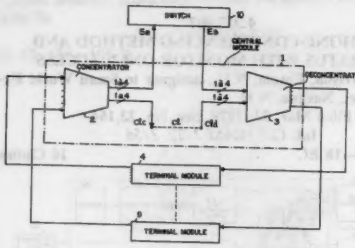
control means arranged for receiving said report signals and arranged for controlling said switching means for the selection of incoming lines for said transmitting of signals.

4,317,008

MODULAR TIME-DIVISION SWITCHING NETWORK

Claude Athenes; Jean L. J. Meresse, and Jacques E. Salle, all of Colombes, France, assignors to Le Materiel Telephonique Thomson-CSF, Paris, France

Filed Apr. 25, 1980, Ser. No. 143,555
Claims priority, application France, Apr. 27, 1979, 79 10805
Int. Cl.³ H04Q 3/60
U.S. Cl. 179—18 FC 6 Claims



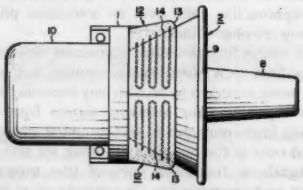
1. A modular switching network for small-capacity time-division telephone exchange units for interconnecting subscriber and trunk line connecting units, each subscriber and trunk line connecting unit comprising a certain number of PCM trunks for connecting said subscriber and trunk line connecting units to said exchange units, and each said PCM trunk constituting an input and an output of a central module contained in the subscriber trunk line connecting unit, wherein the subscriber and trunk line connecting units are connected directly in pairs by said PCM trunks.

4,317,009

COLDPROOF REFLEX HORN SPEAKER

Yoshishige Shintaku, Osaka, Japan, assignor to Ibuki Kogyo Co., Ltd., Osaka, Japan

Filed Jun. 10, 1980, Ser. No. 158,277
Claims priority, application Japan, Apr. 8, 1980, 55-47574[U]
Int. Cl.³ H04R 1/00, 9/06
U.S. Cl. 179—115.5 H 3 Claims



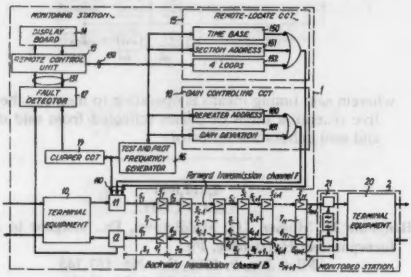
1. A coldproof reflex horn speaker comprising:
(a) a frame;
(b) a magnet mounted to the frame;
(c) a diaphragm arranged in front of the magnet, whose end periphery is wound by a voice coil; and
(d) inner and outer horns mounted to the frame, characterizing by an electric heater device disposed to the outer horn.

4,317,010

REMOTE MONITORING SYSTEM FOR REMOTE LOCATING AND GAIN REGULATING OF AMPLIFICATION CIRCUITS IN DATA TRANSMISSION LINE

Jean-Jacques Y. Fillot, 2 Residence Grand Champ, rue des Entrees, Marly-le-Roi, France (78160)

Filed Dec. 26, 1979, Ser. No. 107,418
Claims priority, application France, Dec. 22, 1978, 78 36097
Int. Cl.³ H04M 3/32
U.S. Cl. 179—175.31 R 20 Claims



1. In a remote monitoring system for monitoring remote amplification in line sections of a bidirectional data transmission line interconnected between a monitoring station and a monitored station;

each line section comprising:

a forward transmission channel transmitting a first data signal from said monitoring station to said monitored station which is looped through repeaters with said monitoring station;

a forward amplification circuit comprising amplifying means for said first data signal and regulating means for said forward circuit amplifying means;

a backward transmission channel transmitting a second data signal from said monitored station to said monitoring station;

a backward amplification circuit comprising amplifying means for said second data signal and regulating means for said backward circuit amplifying means;

detecting means for an address signal not modified by a repeater and delivered on the forward transmission channel of said line section from said monitoring station; and

switching means controlled by said address signal detecting means connecting the output of said forward circuit amplifying means to the input of said backward circuit amplifying means;

said monitoring station comprising:

delivering means for said address signals in the forward direction on said forward transmission channel to provide the remote address location of a line section;

register delivering means for at least one test signal and a pilot signal over the forward transmission channel which is looped with the said repeaters through the monitoring and monitored stations;

analyzing means for detecting transmission faults after said forward and backward amplification circuits of the remote located line section have been looped through said monitoring station, from said test signal and said pilot signal which have been retransmitted on the backward transmission channel of said line from said monitored station;

means for delivering address and gain variation control signals in said forward direction on said forward transmission channel after looping of said remote located line

section through said monitoring station in response to the transmission fault analysis in said analyzing means;

each of said line sections further comprising means controlled by said address signal detecting means for validating all the amplification circuit address and gain variation control signals relating to said line section; and further comprising

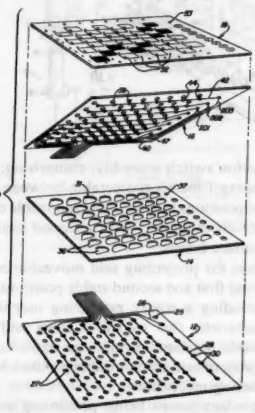
means for controlling said gain regulating means of each of said backward and forward amplification circuits of said line section in response to the validated amplification circuit address and gain variation control signal.

4,317,011

MEMBRANE TOUCH SWITCH

Louis R. Mazurk, Glenview, Ill., assignor to Chicago Decal Company, Chicago, Ill.

Filed Jan. 21, 1980, Ser. No. 113,609
Int. Cl.³ H01H *13/70*
U.S. Cl. 200—5 A **13 Claims**



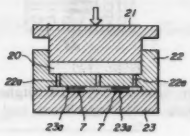
1. A membrane switch comprising; a base sheet having a plurality of conductive lines on one surface of the sheet, each of said conductive lines including a layer of aluminum along the entire length of each of the conductive lines and a layer of silver contacting the layer of aluminum along the entire length of each of the conductive lines, a spacer sheet having one side adjacent to the side of the base sheet having the conductive lines, said spacer sheet having a plurality of apertures, each of said apertures being aligned with a selected portion of a selected conductive line, a flexible cover sheet positioned adjacent to the other side of the spacer sheet, a second plurality of flexible second conductive lines on the side of the flexible cover sheet adjacent to said base sheet having selected portions of the second conductive lines positioned in alignment with selected apertures, each of said second conductive lines having a second layer of aluminum along the entire length of each of the conductive lines and a second layer of silver along the entire length of each of the conductive lines contacting said second layer of aluminum, whereby flexing of a selected portion of the cover sheet toward a selected aperture moves that selected portion of the flexible second conductive line on that selected portion of the flexible cover sheet through the selected apertures into electrical contact with a selected portion of a selected conductive line on the base sheet aligned with the selected aperture.

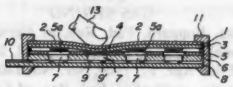
4,317,012

DISPLAY BOARD TYPE SWITCHING DEVICE

Toshiyuki Itoh, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Tokyo, Japan

Filed Apr. 17, 1980, Ser. No. 141,192
Claims priority, application Japan, Apr. 26, 1979, 54-50872
Int. Cl.³ H01H *1/02*
U.S. Cl. 200—5 A **8 Claims**





1. A switching device, comprising;

a flexible display board having a number of switching positions,

a sheet member in parallel and slightly spaced relationship with said flexible display board,

a number of pressure sensitive conducting rubber members integrally molded with said sheet member and disposed in corresponding positions to said switching positions respectively,

a pair of electrodes at positions corresponding to and connectable through each of said rubber members,

a hard base plate having cutout holes at positions corresponding to said respective switching positions disposed between said flexible display board and said sheet member, and

conducting bodies at said switching positions respectively contactable with the upper side of said conducting rubber members.

6. A method for manufacturing a sheet member for a pressure sensitive display board switching device and having a number of pressure sensitive conducting rubber members integrally molded with said sheet member, comprising the steps of;

arranging the number of pressure sensitive conducting rubber members at corresponding switching positions in a lower mold,

extruding gel-like insulative rubber compound from an upper mold by an extruding mold, and

vulcanizing the insulative rubber compound in the lower mold and thereby forming a flat rubber sheet having substantially the same height as that of the pressure sensitive conducting rubber members with said conducting rubber members being embedded in the insulative sheet.

4,317,013

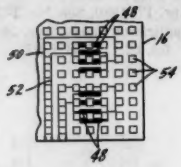
MEMBRANE SWITCH WITH UNIVERSAL SPACER MEANS

Willis A. Larson, Crystal Lake, Ill., assignor to Oak Industries, Inc., Rancho Bernardo, Calif.

Filed Apr. 9, 1980, Ser. No. 138,656
Int. Cl.³ H01H *9/00*
U.S. Cl. 200—5 A **15 Claims**

15. In a membrane switch, a flexible membrane, a substrate, a set of first conductors on the membrane including a plurality of switch sites, a set of second conductors on the substrate including a plurality of switch sites in facing relation with the switch sites of the first conductors, and a universal spacer

means which normally maintains the first and second conductors in spaced, non-contacting relation while permitting pressure-responsive contact between aligned switch sites which can be anywhere on the membrane and substrate.



4,317,014

GAS SPRING

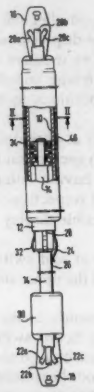
Rolf Langanke, Boppard, Fed. Rep. of Germany, assignor to Stabilus GmbH, Koblenz-Neuendorf, Fed. Rep. of Germany

Filed Apr. 17, 1980, Ser. No. 140,453

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1979, 2917390

Int. Cl.³ H01H *3/00*

U.S. Cl. 200—61.62 **21 Claims**



1. In a gas spring comprising

(a) a cylinder member having an axis and being formed with a cavity, said cylinder member being closed at one end thereof and being provided with a sealing and guiding unit at the other end thereof;

(b) a body of gas under superatmospheric pressure in said cavity;

(c) a piston rod member axially movable inward and outward of said cavity in sealing engagement with said sealing and guiding unit;

(d) fastening means attached to respective portions of said members outside said cavity for fastening said members to respective objects;

(e) at least one first electrically conductive terminal on said cylinder member accessible from outside said cavity;

(f) at least one second electrically conductive terminal on said piston rod member accessible from outside said cavity; and

(g) conductive means connecting said terminals during at least a portion of the movement of said piston rod member with respect to said cylinder member, the improvement wherein:

said conductive means includes a printed circuit-type conductor provided on a flexible strip of insulating sheet material, said strip being applied to the outer exterior face of said cylinder member and shaped in conformity therewith and extending over at least part of the axial length of said cylinder member.

4,317,015

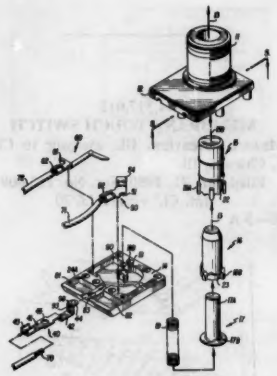
MULTI-CIRCUIT SWITCH ASSEMBLY

Horace J. Buttner, 1501 Palos Verdes Dr., North, Harbor City, Calif. 90710, and Arnold B. Nordstrom, Torrance, Calif., assignors to Horace J. Buttner, Harbor City, Calif.

Filed Nov. 30, 1979, Ser. No. 99,043

Int. Cl.³ H01H *13/56*

U.S. Cl. 200—153 J **8 Claims**



1. A pushbutton switch assembly, comprising:

moveable contact means projectable between first and second stable positions in which said moveable contact means is alternatively in contact with a second contact means or a third contact means;

moving means for projecting said moveable contact means between said first and second stable positions, said moving means including a rotary ratcheting mechanism having the characteristic that its travel from said first to said second stable positions includes an extra motion beyond and returning to said second stable position for indexing of said ratcheting mechanism;

said third contact means being positioned to contact said moveable contact means in said second stable position and having a configuration including a plurality of attached portions, which portions extend in at least one plane lying generally across the line of travel of said moveable contact means, said portions having longitudinal axes which are at a sufficient angle in their respective plane or planes whereby one of said portions, when deflected, is adaptable to cause torsional strain in at least one of the remaining portions.

4,317,016

INDUCTION HEATING COOKING APPARATUS

Susumu Ito, Fuji, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 17, 1980, Ser. No. 217,442

Claims priority, application Japan, Dec. 27, 1979, 54-171681

Int. Cl.³ H05B *5/04*

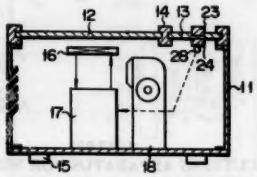
U.S. Cl. 219—10.49 R **12 Claims**

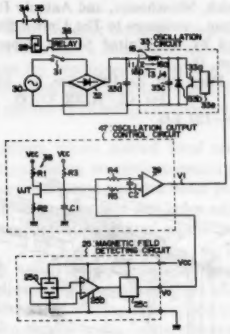
1. An induction heating cooking apparatus comprising a housing with a top plate section including a first nonmagnetic portion on which an induction heating pan is placed and a second nonmagnetic portion for controlling the induction heating of the cooking pan; a drive circuit with an oscillation circuit including an induction heating coil for heating said cooking pan, which is contained in said housing for being

connected to an external power source; and oscillation output control means for controlling the oscillation output of said oscillation circuit; wherein said oscillation output control means comprises:

a magnetic field generating element slidable along a guide path formed on the surface of said second portion of said top plate section;

a magnetic field adjusting plate made of a magnetic material and provided on the inner side corresponding to said guide path of said second portion of said top plate section;





a magnetic field detecting circuit which is provided close to a first end of said magnetic field adjusting plate and includes a semiconductor element for producing an output signal corresponding to an intensity of a magnetic field developed from said magnetic field generating element; and

an oscillation output control circuit which compares the output signal from said magnetic field detecting circuit with a reference signal produced from a reference signal generating circuit.

4,317,017

MICROWAVE STEAMER

Robert F. Bowen, Burlington, Mass., assignor to Raytheon Company, Lexington, Mass.

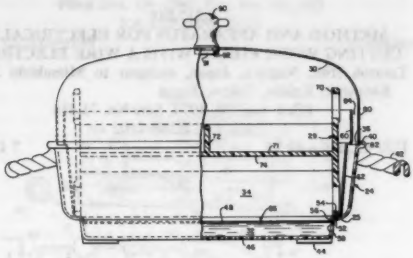
Filed Mar. 3, 1981, Ser. No. 239,970
Int. Cl.³ H05B *6/80*
U.S. Cl. 219—10.55 E **22 Claims**

1. In combination:

a microwave transparent container;

a microwave reflective container having at least a portion removably positioned in said microwave transparent container, said microwave reflective container having a perforated bottom spaced from the bottom of said microwave transparent container; and

a microwave reflective lid removably supported by said microwave transparent container, said lid having a region around its periphery substantially parallel to portions of said microwave reflective container for a distance of



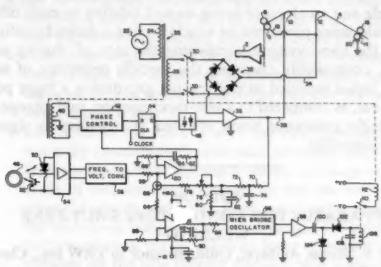
greater than 0.5 inches in a direction perpendicular to the edge of said lid.

4,317,018

FAIL SAFE CONTROL CIRCUIT

Richard W. Denny, Littleton, and Paul A. Diddens, Denver, both of Colo., assignors to Honeywell, Inc., Minneapolis, Minn.

Filed Mar. 12, 1981, Ser. No. 242,969
Int. Cl.³ H05B *1/02*
U.S. Cl. 219—216 **14 Claims**



1. An energization control circuit for dynamically controlling the flow of electrical current to a utilization means comprising:

an energy loop including means connected to a current source means, a current control means, switch means conneced between said current control means and said means connected to said current source means, said current control means having an output for connection to said utilization means;

a control loop including a condition responsive signal generating means, an operational amplifier having an input at a summing junction connected to the output of said signal generating means, a control signal generating means having a control input connected to the output of said operational amplifier, said control signal generating means having an output connected to a control input of said current control means, and a feedback network connected between said output of said current control means and said summing junction; and

a safety shut-off loop connected to said summing junction and including means responsive to a voltage signal at said summing junction to provide a deviation indicative signal, an oscillator connected to be responsive to said deviation indicative signal, said oscillator being operative to provide an oscillatory output signal only when said deviation indicative signal is between predetermined limiting values, and means connected to said oscillator to be responsive to said oscillatory output signal to maintain said switch

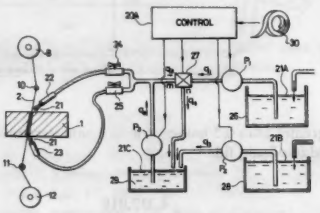
means closed only during the continuance of said oscillatory output signal.

4,317,019

METHOD AND APPARATUS FOR ELECTRICALLY CUTTING WORK PIECES WITH A WIRE ELECTRODE

Teturoh Itoh, Nagoya, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 30, 1979, Ser. No. 71,416
Int. Cl.³ B23P 1/02
U.S. Cl. 219—69 M **7 Claims**



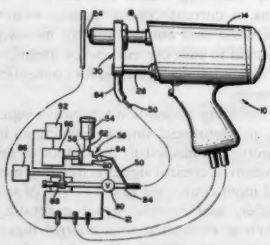
1. In a method of electrically cutting a work piece with a wire electrode, said work piece being electrically cut by applying electric current through a cutting liquid in a cutting gap formed by said wire electrode and said work piece, said wire electrode and work piece being moved relative to each other to cut said work piece into an article having a desired configuration, the improvement comprising the step of: during said cutting, controllably changing the specific resistance of said cutting liquid supplied to said cutting gap during a taper portion of cut, as compared to a non-taper portion, said change in the specific resistance being effected in response to signals from a controller.

4,317,020

APPARATUS FOR CONDUCTING SMUT-FREE WELDING

Thomas E. Shoup, Amherst, Ohio, assignor to TRW Inc., Cleveland, Ohio

Filed Sep. 14, 1979, Ser. No. 75,751
Int. Cl.³ B23K 9/20
U.S. Cl. 219—98 **24 Claims**



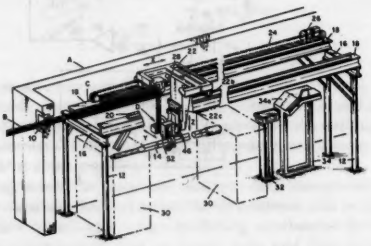
1. Apparatus for welding a stud to a workpiece with the workpiece around the stud being maintained substantially free of contaminant coatings, said apparatus comprising a welding tool having means for holding the stud, means for establishing a welding arc between the stud and the workpiece, and means for moving the stud toward and away from the workpiece, a spark shield body, a welding foot supporting an end portion of said spark shield body in a position around said holding means with said spark shield body having an inner surface spaced from said holding means and an outer surface, said spark shield body having a plurality of fluid passages extending from the outer surface toward the other end portion of said shield body and spaced around the periphery of said shield body, each of said passages being positioned at an angle to a radius of said spark shield body, a source of gas under pressure communicating with ends of said passages for supplying gas through said passages during a welding operation, and a source of anti-smut liquid under pressure communicating with the ends of said passages for supplying liquid through said passages during the welding operation.

4,317,021

LASER CUTTING APPARATUS FOR NUCLEAR CORE FUEL SUBASSEMBLY

Allan P. Walch, Manchester, and Antonio B. Caruolo, Vernon, both of Conn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 22, 1980, Ser. No. 123,861
Int. Cl.³ B23K 27/00
U.S. Cl. 219—121 LG **17 Claims**



1. Apparatus for cutting an outer shroud of an elongated core fuel subassembly and the like utilizing an associated laser beam, said apparatus comprising:

a frame;

means for supporting said core fuel subassembly beneath said frame;

first carriage means carried by said frame for translatory movement in a longitudinal direction along said frame;

a first turning mirror carried by said first carriage means for directing said laser beam in a vertical direction producing a generally vertical laser beam;

a second carriage means carried by said first carriage means for translatory movement in a vertical direction;

a second turning mirror carried by said second carriage means for receiving said vertical laser beam and directing said beam in a generally horizontal direction;

a third carriage means carried by said second carriage means for translatory movement in a lateral direction transverse to said longitudinal direction;

mirror means carried by said third carriage means for receiving said laser beam from said second turning mirror and focusing said beam at a focal point on said core fuel shroud; and

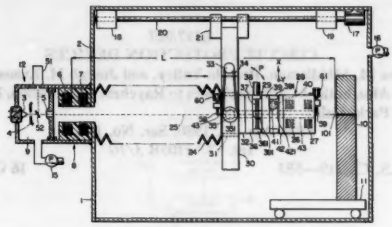
means for guiding said second and third carriage means during cutting operations automatically moving said second and third carriage means in said vertical and lateral directions to maintain said focal point of said laser beam at the correct location for cutting.

4,317,022

ELECTRON BEAM WELDING MACHINE

Hisanao Kita, Hitachi; Yoshinori Karatsu; Takamitsu Nakazaki, both of Takahagi, and Yoji Akutsu, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 19, 1980, Ser. No. 208,428
Claims priority, application Japan, Nov. 19, 1979, 54-148914
Int. Cl.³ B23K *27/00*
U.S. Cl. 219—121 EU 13 Claims



1. An electron beam welding machine comprising:

a vacuum chamber in which a workpiece is to be located;

electron gun means for producing an electron beam along a path and including first beam adjusting means for modifying said beam, said electron gun being mounted on said vacuum chamber;

second beam adjusting means spaced from said first beam adjusting means and being movably mounted in said chamber for movement along said electron beam path for adjusting said electron beam from said first beam adjusting means so as to direct said beam to a desired spot of the workpiece; and

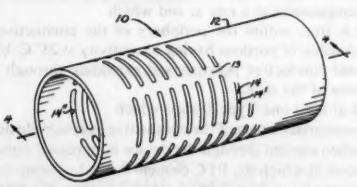
position adjusting means for adjusting the position of said second beam adjusting means, said position adjusting means including first means for moving said second beam adjusting means in a plane perpendicular to the electron beam path and second means for rotating said second beam adjusting means about an axis perpendicularly crossing the electron beam path.

4,317,023

METHOD OF MAKING SLOTTED WELL SCREEN

Gregory A. Gryskiewicz, North St. Paul, Minn., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 119,279, Feb. 7, 1980. This application Nov. 24, 1980, Ser. No. 210,097
Int. Cl.³ B23K *27/00*
U.S. Cl. 219—121 LN 4 Claims



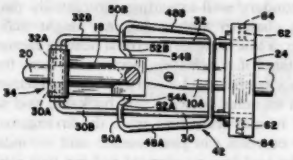
1. A method of producing a slotted plastic well screen from a single hollow cylinder of plastic comprising the steps of rotating the cylinder, focusing a laser beam on or slightly above the outer surface of the cylinder so that the beam diverges slightly as it passes through the outer surface and vaporizes the underlying plastic to form a slightly undercut slot having tapered walls which diverge from each other in an inward direction.

4,317,024

ADJUSTABLE AIR-CARBON ARC TORCH

Paul B. Moss, 202 S. Lansing, Tulsa, Okla. 74102

Filed Jun. 19, 1980, Ser. No. 161,030
Int. Cl.³ B23K *9/28*
U.S. Cl. 219—144 19 Claims



1. A holder for an electrode comprising:

a body of conductive material having a forward and rearward end, the rearward portion having an insulated cover forming a handle adaptable to be engaged by the hand of the user;

an electrode support affixed to said body forward end and having an elongated groove in the top surface configured to receive an electrode therein, the electrode support having a forward end and a rearward end;

an insulated block affixed to said body and spaced from said forward end;

a pair of elongated paralleled bail members extending from said block and to either side of said electrode support, the bail members each having inner and outer ends;

an electrode engagement member secured between outer ends of said bail members, an electrode being receivable between the electrode engagement member and said electrode support; and

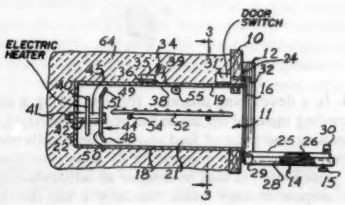
a wire lever in the form of a U, the two ends being being inwardly towards each other and pivotally received, one from each side into opposed co-linear openings in the side walls of said electrode support so that the wire lever is pivotal towards and away from said handle, each leg of the wire lever being bent at a sharp angle, the intermediate portion of each leg of the wire lever engaging said bail member on the side thereof opposite said body whereby when the wire lever is pivoted towards said body it serves to deflect said bail members outer ends towards said electrode support and said wire lever is locked in closed position by toggle action.

4,317,025

LOW WATTAGE ELECTRIC OVEN FOR MOBILE VEHICLES

Roger A. Starnes, 4502 Sudbury Rd., Doraville, Ga. 30360

Filed Dec. 31, 1979, Ser. No. 108,564
Int. Cl.³ A21B *1/22*; F24C *15/32*; F27D *21/02*
U.S. Cl. 219—202 1 Claim



1. An oven for mobile vehicles and the like for operation from the vehicle's electrical system, said oven including a cooking chamber defined by a top and bottom, side walls connecting said top and bottom, and a back closing the rear of

said cooking chamber, a face plate carrying said top and bottom and said side walls for mounting said oven within a vehicle, said face plate defining an opening therein for providing access to said cooking chamber, a door hinged to said face plate for selectively closing said opening, catch means for holding said door tightly closed, and sealing means between said door and said face plate to prevent heat loss, a secondary wall generally parallel to and spaced inwardly from said back, said secondary wall extending substantially the width of said cooking chamber and having less height than said cooking chamber, a low wattage electrical heating element operable on the voltage of a vehicle's electrical system for heating said cooking chamber, said electrical heating element being plate-like and mounted between said back and said secondary wall parallel to said secondary wall, the arrangement being such that air currents can pass beneath said secondary wall to be heated by said heating element and can pass over said secondary wall and into said cooking chamber, said secondary wall having a rear surface facing said heating element and a front surface facing said cooking chamber, said rear surface being smooth and shiny to reflect radiant heat, said front surface being dull and roughened to readily dissipate heat therefrom into the cooking chamber, so that said secondary wall will have a temperature no higher than the temperature of said cooking chamber, and a light operable on a vehicle's electrical system for selectively illuminating said cooking chamber, said light including a light socket and a bulb, said light socket being mounted on said top, outside said cooking chamber, a heat insulator disposed between said light socket and said top, and a hole defined in said top aligned with said bulb for admitting light into said cooking chamber, a temperature sensing means disposed within said cooking chamber and control means for selectively energizing said heating element in response to said temperature sensing means, and thick thermal insulation covering said walls, said top and bottom and said back of said oven, said light being between said insulation and said top.

4,317,026

DEVELOPING CHAMBER

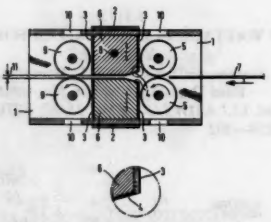
Jochen Koblo, Wiesbaden-Auringen, and Götz von dem Bussche, Schwalbach, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 25, 1980, Ser. No. 133,894

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1979, 7908775[U]

Int. Cl.³ H05B *1/00*

U.S. Cl. 219—216 **6 Claims**



1. In a developing chamber for developing a photographic recording material for use in the vesicular method, comprising a housing and pairs of feed and discharge rolls therein,

the improvement comprising at least two heatable metal blocks within said housing at an adjustable distance with respect to each other whereby a gap for a rectilinear passage of recording material is provided, the distance between said blocks facing the gap and a surface of the recording material in said gap being in the range of about 25 to 50 μm,

sliding enhancing material means in areas of said blocks facing said gap, said sliding enhancing material means being inert to said recording material,

and temperature control means ensuring low temperature variations in said blocks and a temperature variation in said gap less than about ±1.5° C.

4,317,027

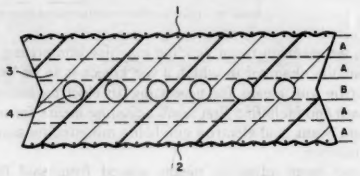
CIRCUIT PROTECTION DEVICES

Lee M. Middleman, Portola Valley, and Joseph H. Evans, Palo Alto, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Apr. 21, 1980, Ser. No. 142,054

Int. Cl.³ H05B *3/10*

U.S. Cl. 219—553 **16 Claims**



1. An electrical device which comprises

(1) a laminar conductive polymer element, at least a part of which is a PTC element, and

(2) two substantially planar electrodes which lie either side of the laminar conductive polymer element and which can be connected to a source of electrical power, said electrodes being electrically connected to opposite faces of said conductive polymer element so that when the electrodes are connected to a source of electrical power, they cause current to flow through said PTC element;

said device being such that, if the portion thereof between the electrodes is divided into parallel-faced slices, the thickness of each slice being about 1/5 of the distance between the closest points of the two electrodes and the faces of the slices being planes which are perpendicular to a line joining the closest points of the two electrodes, then there are at least two Type A slices, each of which

(a) comprises a part of the PTC element which, when the current through the device is increased rapidly from a level at which the PTC element is in a low temperature, low resistance state to a level whch converts the PTC element into a high temperature high resistance state, increases in temperature at a rate x, and which

(b) is free, within the periphery of the conductive polymer element, of portions having a resistivity at 23° C. higher than said conductive polymer and extending through the thickness of the slice,

and at least one Type B slice which

(a) comprises a part of the conductive polymer element which, when current through the device is increased rapidly from a level at which the PTC element is in a low temperature, low resistance state to a level which converts the PTC element into a high temperature high resistance state, increases in temperature at a rate y which is greater than x; and

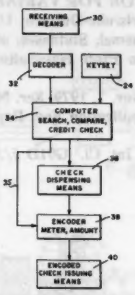
(b) comprises, within the periphery of the conductive polymer element, at least one first portion composed of a conductive polymer and at least one second portion comprising a material having a resistivity at 23° C. higher than said conductive polymer;

each of the slices adjacent an electrode being a Type A slice.

4,317,028
SUBSCRIBER CHECK ACCEPTING AND ISSUING APPARATUS

Luther G. Simjian, 1750 S. Ocean La., Fort Lauderdale, Fla. 33316

Filed Apr. 21, 1980, Ser. No. 142,263
Int. Cl.[3] G06K 7/00
U.S. Cl. 235—380 6 Claims



1. A subscriber operable apparatus including check receiving means, dispensing means and computer means for establishing the authenticity of a check accepted by searching its stored account data comprising:

means for receiving an encoded check adapted to having been used for operating a metering device;

means for providing a subscriber identifying code signal;

means for decoding an encoded check of the type stated received by said means for receiving and providing a check code responsive signal;

computer means coupled for receiving said subscriber identifying code signal and said check code responsive signal and in response to the receipt of both said signals searching its stored account data and determining the authenticity of said received check and providing an authenticity signal responsive to authenticity of said check having been established;

check storage and dispensing means for storing checks in character and nature substantially identical with said accepted check coupled for dispensing a new check responsive to the receipt of said authenticity signal;

encoding means coupled for encoding said dispensed check responsive to data provided by said computer means for rendering said check valid for operating a metering device, and

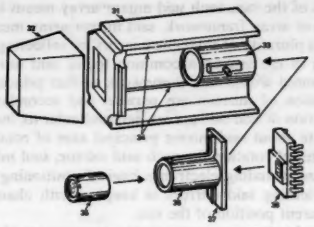
issuing means for rendering said dispensed new and enclosed check available to a subscriber.

4,317,029
OPTICS FRAME ASSEMBLY

Jerry G. Warthan, Plano, Tex., assignor to Recognition Equipment Incorporated, Irving, Tex.

Filed Jul. 8, 1980, Ser. No. 166,934
Int. Cl.[3] G06K 7/14
U.S. Cl. 235—454 7 Claims

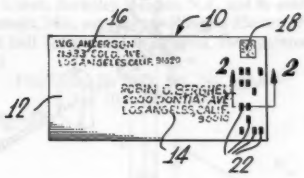
1. An optics frame assembly for an electronic scanning device comprising a frame, a lens tube assembly and reflector, said lens tube assembly telescoping into a tubular part of the frame at one end thereof and the reflector mounting on the opposite end of the frame and having apertures thereon through which scanning is accomplished, said lens tube assembly having a flange on one end thereof to which said electronics scanning device may be mounted.



4,317,030
MAILING PACKAGE FOR FACILITATING AUTOMATIC SORTING OF MAIL

Robin C. Berghell, 1250 Westholme Ave., Los Angeles, Calif. 90024

Filed Jul. 24, 1979, Ser. No. 60,216
Int. Cl.[3] G06K 21/04; B07C 5/342
U.S. Cl. 235—489 4 Claims



1. An apparatus for facilitating the automatic sorting of mail by optical scanning, said apparatus comprising:

a first sheet including a surface having a first optical reflectivity;

a second sheet including a surface having a second, contrasting optical reflectivity, and including a coded array of apertures therethrough, said second sheet overlying said first sheet so that said surface of said first sheet is visible through said apertures in said second sheet and in optical contrast to said surface of said second sheet;

said second sheet being a mailing envelope, and said first sheet being disposed in said envelope and constrained to remain below said array of apertures; and

the apparatus being further characterized in that said array of apertures is arranged adjacent one end of said envelope, a piece of correspondence is disposed in said envelope, said piece of correspondence being sized to substantially fill said envelope, and said first sheet is arranged to be folded about one end of said piece of correspondence in order to constrain said first sheet below said array of apertures.

4,317,031
CENTRAL FOCUS SOLAR ENERGY SYSTEM

Max Findell, 836 Rio Arriba Ave. SE., Albuquerque, N. Mex. 87123

Continuation-in-part of Ser. No. 930,210, Aug. 2, 1978, abandoned. This application Jun. 20, 1980, Ser. No. 161,443
Int. Cl.[3] G01J 1/20
U.S. Cl. 250—203 R 10 Claims

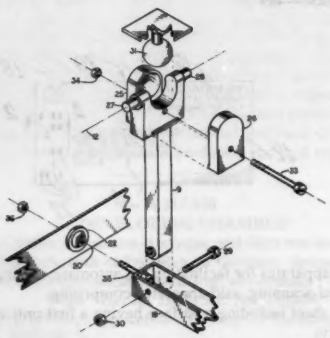
1. A central focus solar energy system whose operation is

independent of the alignment of said system with respect to the spin axis of the earth, said system comprising:

at least one mirror array means positioned to receive direct rays of the sun, each said mirror array means including a mirror array framework, said mirror array means including a plurality of rotatable mirrors for reflecting the direct rays of the sun on a common focus, said mirrors being mounted within said framework so that principal axes of rotation of mirrors are parallel and secondary axes of rotation of said mirrors are perpendicular to, intersect and rotate about said mirror principal axes of rotation at the center of rotation for each said mirror, said mirror array means including electromechanical positioning means for reorienting said mirrors in keeping with changes in the apparent position of the sun;

a control unit means connected to components of the system for receiving electrical signals therefrom and generating electrical control signals in response thereto, said control unit being connected to each said mirror array means for transmitting electrical control signals to said electromechanical means to cause rotations of said mirrors;

a sun tracker means electrically connected to said control unit that includes a sensor means for viewing the sun and generating electrical signals indicative of the misalignment of said sensor with respect to the sun that are transmitted to said control unit, said sun tracker including electromechanical positioning means electrically connected to said control unit for receiving control signals therefrom and orienting said sensor means to view the sun;



a receiver means electrically connected to said control unit and mounted adjacent to said mirror array means, said receiver means including a radiation receiver surface facing said mirror array means, said receiver means including radiation detector means mounted adjacent to said radiation receiver surface for detecting when the center of the common focus of said mirror array means is not centered on said radiation receiver surface, said radiation detector means generating electrical signals indicative of the direction the common focus must be moved to be centered on said radiation receiver surface that are transmitted to said control unit, said control unit upon receiving a signal from said radiation detector means transmitting electrical control signals to said electromechanical means to cause rotations of said mirrors and operating to disable said sun tracker means to permit small corrections in orientations of said mirrors by said receiver means;

tilt detector means electrically connected to said control unit and mounted in said system for detecting large anomalies between said sun tracker orientation and the direction of the sun that exceed the correction capabilities of the sun tracker, said tilt detector means generating electrical signals in response to such anomalies that are transmitted to said control unit which in turn transmits electrical control signals to said sun tracker means and said mirror array means to cause said sun tracker to acquire the sun, whereby after sun acquisition the sun tracker means and receiver means controlling the orientation of said rotatable mirrors.

4,317,032

PULSE GENERATOR FOR VARIABLE-SPEED DRIVES

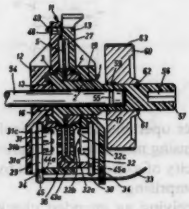
Helfried Hanus, Karlsruhe-Durlach; Uwe Winkler, Ettlingen, and Patrice J. Kemmel, Stutensee, all of Fed. Rep. of Germany, assignors to Pfaff Haushaltmaschinen GmbH, Fed. Rep. of Germany

Filed Nov. 7, 1979, Ser. No. 92,192

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1978, 2848612

Int. Cl.³ G01D *5/34*

U.S. Cl. 250—231 SE **8 Claims**



1. A pulse generator for variable speed drives, particularly sewing machine drives having a main rotatable shaft and a housing, comprising:

a casing defining an inner space;

a generator shaft rotatably mounted in said casing and rotatable in synchronism with the main shaft of the sewing machine drive;

a pulse disc having light-dark zones connected to said generator shaft in said inner space;

a light transmitting module and a light-receiving module in said casing disposed on either side of at least a portion of said pulse disc;

said casing including on either side of said pulse disc and spaced from said pulse disc, bearing surfaces bearing against corresponding bearing surfaces of said generator shaft for centering and rotatably mounting said pulse disc in said inner space of said casing, said bearing surfaces including axially extending and radially extending surfaces relative the axis of the said generator shaft to axially and radially hold the position of said casing with respect to said generator shaft;

said casing comprising two casing parts each having one receiving chamber for radially receiving one of said light-transmitting and light-receiving modules respectively;

each of said casing parts including a radial wall separating said receiving chamber from said inner space with a plurality of axially extending parallel apertures extending through each wall between each of said receiving chambers and said inner space for the passage of light between said light-transmitting module and said light-receiving module and through portions of said pulse disc;

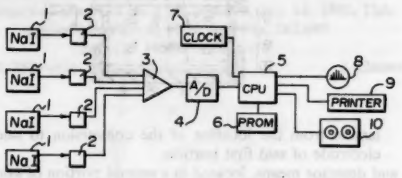
each of said light-transmitting and light-receiving modules including a circuit board, each of said receiving chambers comprising a slide-in compartment for radially receiving each of said circuit boards respectively; and

each of said receiving chambers of each casing parts being closed when said casing parts are assembled to form said casing by a cover plate extending from the other of said casing parts.

4,317,033
GAMMA RAY PROSPECTING SYSTEM

Jaroslav R. Panenka, Calgary; Bohuslav Pavlik, and Daniel P. Olson, both of Ottawa, all of Canada, assignors to Kenting Earth Sciences Limited, Ottawa and Hudson's Bay Oil and Gas Company Limited, Calgary, both of, Canada

Filed Nov. 16, 1979, Ser. No. 95,101
Claims priority, application Canada, Jun. 15, 1979, 329844
Int. Cl.³ G01V 5/00; G01T 1/20
U.S. Cl. 250—253 18 Claims



1. Means for distinguishing full energy absorption peaks received across an energy band from background energy at a particular physical location comprising:

(a) means for receiving a gamma ray energy spectrum of radiation,

(b) means for distinguishing the peak energy level within an energy band of said spectrum, and for integrating said energy within said band,

(c) means for distinguishing a statistical value of the background gamma radiation within said band, and for integrating the background radiation within said band,

(d) means for subtracting the integrated statistical value of background energy from the integrated peak energy, and

(e) means for providing an output signal representative of the difference of the integrated peak energy level and said integrated statistical value within said band, to provide an indication of the presence of radiation emissive mineral at said particular location.

4,317,034
METHOD AND APPARATUS FOR MEASURING NEUTRON CHARACTERISTICS OF MATERIAL SURROUNDING A BOREHOLE

Russel R. Randall, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 156,971, Jun. 6, 1980. This application Jun. 26, 1980, Ser. No. 163,260
Int. Cl.³ G01V 5/00
U.S. Cl. 250—262 18 Claims

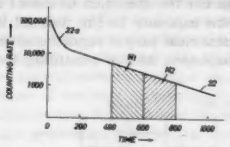
1. A method for logging the formations surrounding an earth borehole, comprising:

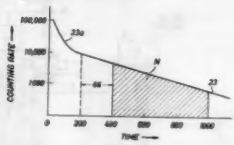
pulsedly irradiating said formations with discrete bursts from a source of high energy neutrons;

detecting radiations emanating from said irradiated formations at a detector spaced from said source;

measuring said detected radiations during first and second time intervals following a burst from said source;

generating time-separated electrical pulses indicative of said detected radiations during a third fixed time duration interval following a subsequent burst from said source; and



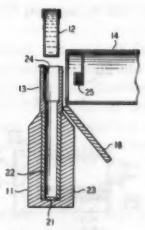


controlling automatically the starting time of said third measurement interval in accordance with the said measurement from said first and second time intervals.

4,317,035
GOLD MONITORING PROCEDURE

Richard L. Cohen, Berkeley Heights, N.J., and Ronald L. Meek, Lee's Summit, Mo., assignors to Western Electric, New York, N.Y. and Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 20, 1979, Ser. No. 105,619
Int. Cl.³ G01N 23/20
U.S. Cl. 250—272 11 Claims



1. A process for plating gold from a gold plating solution including the step of measuring gold concentration in the gold plating solution characterized in that the gold concentration is measured by exposing the gold plating solution to radiation from a radioactive source emitting photons of sufficiently high energy to excite X-ray fluorescence from the gold and detecting the resulting X-ray fluorescence with a solid state detector.

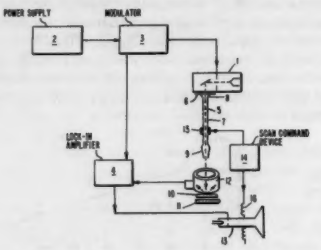
4,317,036
SCANNING X-RAY MICROSCOPE

Chia-Gee Wang, P.O. Box 211, Millwood, N.Y. 10546

Filed Mar. 11, 1980, Ser. No. 129,287
Int. Cl.³ G01N 21/24, 23/20
U.S. Cl. 250—274 11 Claims

1. A scanning X-ray microscope including an X-ray source capable of emitting a beam of X-rays, a collimator positioned to receive the beam of X-rays, to collimate this beam, a focusing cone means to focus the beam of X-rays, directed by the collimator, onto a focal plane, a specimen mount for supporting a specimen in the focal plane to receive the focused beam of X-rays, an X-ray beam scanning means to relatively move

the specimen and the focusing cone means and collimator to scan the focused X-ray beam across the specimen, a detector disposed adjacent the specimen to detect emmissions by the specimen upon exposure to the focused beam of X-rays to provide an electrical output representative of this detection, means for displaying and/or recording the information provided by the output from the detector, means for providing information to the recording and/or display means representative of the scan rate and position of the focused X-ray beam relative to the specimen whereby the recording and/or display means can correlate the information received to record and/or display quantitative and distributive information as to the quantity and distribution of elements detected in the specimen.

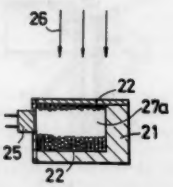


4,317,037

RADIATION DETECTION APPARATUS

Atsushi Suzuki, Higashiyamato; Koichi Urabe, Higashimurayama; Hiromichi Yamada, Hino, and Hideki Kohno, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 11, 1979, Ser. No. 47,133
Claims priority, application Japan, Jun. 9, 1978, 53/77887[U]
Int. Cl.³ G01T *1/20*
U.S. Cl. 250—367 **14 Claims**



1. A radiation detection apparatus comprising a plurality of scintillators each of which includes at least two spaced superposed phosphor layers made of phosphor particles for emitting light in response to received radiation, the thicknesses of said two phosphor layers being different from each other; and a plurality of photodetectors, each photodetector being disposed so as to face the space between layers and directly receive the light emitted into that space by a respective one of the scintillators.

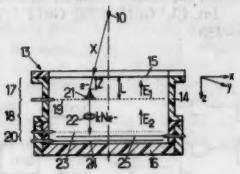
4,317,038

DEVICE FOR DETERMINING THE SPATIAL DISTRIBUTION OF RADIATION

Georges Charpak, Paris, France, assignor to Agence Nationale de Valorisation de la Recherche, Neuilly-sur-Seine, France

Filed Mar. 24, 1980, Ser. No. 133,094
Int. Cl.³ G01T *1/18*
U.S. Cl. 250—385 **9 Claims**

1. A device for determining the spatial distribution of monoenergetic neutral radiation from a point source, comprising:
a gas-filled enclosure having a flat radiation entrance window, a flat outlet field electrode in said enclosure for establishing in a first portion of said enclosure an electrical field of such amplitude that there occurs conversion of said radiation and avalanche electron multiplication resulting in delivery of a pulse of electrons per conversion whose pulse height is an increasing function of the travel path of the electron avalanche from the location of the conversion to said outlet electrode of said first portion,
and detector means, located in a second portion of said enclosure, for receiving said pulse of electrons through said outlet electrode and for determining the coordinates of the pulse in said outlet electrode and the pulse height of said pulse.

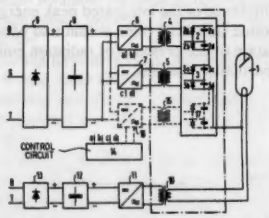


4,317,039

X-RAY DIAGNOSTIC GENERATOR

Denes Romandi, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation of Ser. No. 40,640, May 21, 1979, abandoned. This application Nov. 17, 1980, Ser. No. 207,739
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1978, 2831093
Int. Cl.³ A61B *6/00*; H05G *1/12*
U.S. Cl. 250—418 **2 Claims**



1. An X-ray diagnostic generator characterized by the combination of:
high-voltage transformer means (**4, 5, 15**), with first inverter means (**6, 7, 16**) operating at a frequency lying in the medium frequency range, and first power supply rectifier means (**9**) connected with the input side of the high-voltage transformer means:
an X-ray tube (**1**) with high-voltage rectifier means (**2, 3, 17**) connected between the high voltage transformer means and the X-ray tube;
a filament transformer (**10**) for the X-ray tube, with second inverter means (**11**) operating at a frequency lying in the medium frequency range, and a second power supply rectifier means (**13**) connected with the input side of the filament transformer; and
filter circuit means (**8, 12**) connected between the power supply rectifier means (**9, 13**) and the inverter means (**6, 7, 11, 16**),
said high-voltage transformer means comprising at least three high voltage transformers having at least three respective, individual primary windings, and said first inverter means comprising at least three separate inverters each connected to a respective one of said individual

primary windings, and said individual inverters being operated out of phase with each other so as to supply output voltages to said individual primary windings having at least three respective different phase angles which are offset in phase relative to one another.

4,317,040

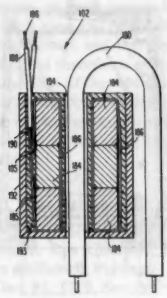
LOW RIPPLE REGULATED X-RAY TUBE POWER SUPPLY FILAMENT TRANSFORMER

Don E. Wuerflein, Mountain View, Calif., assignor to Pennwalt Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 168,479, Jul. 14, 1980. This application Mar. 9, 1981, Ser. No. 242,097

Int. Cl.³ H05G *1/30, 1/10*

U.S. Cl. 250—421 **7 Claims**



1. In an X-ray tubehead having a filament transformer associated therewith, said tubehead supplied by a low ripple, high voltage power supply adapted to receive an unregulated input and to deliver a regulated output adapted to supply power to a load connected across the output of said supply, said power supply comprising

(a) a regulator circuit providing regulation under control of a control signal imputted thereto;

(b) control signal generating means for generating said control signal and inputting same to said regulator circuit;

(c) means for developing a signal representative of said unregulated input and connecting said unregulated input signal to said control signal generating means;

(d) means for developing a signal representative of said regulated output and connecting same to said control signal generating means; and

(e) said control signal generating means having means responsive to both of said representative signals for generating said control signal as a function to both of said representative signals, in combination therewith, the improvement to said filament transformer for providing minimal high voltage stress areas and negligible high voltage breakdown, said filament transformer comprising

a coaxial structure having a single turn secondary.

4,317,041

MULTICHAMBER PHOTOREACTOR

Günther O. Schenck, Bismarckstrasse 31, 433 Mülheim, Fed. Rep. of Germany

Division of Ser. No. 923,710, Jul. 11, 1978, Pat. No. 4,255,283. This application Jun. 2, 1980, Ser. No. 155,580

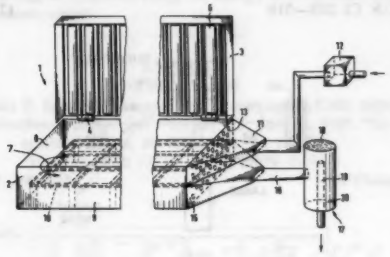
Claims priority, application Fed. Rep. of Germany, Aug. 6, 1977, 2735550

Int. Cl.³ G01M *21/01*

U.S. Cl. 250—435 **32 Claims**

1. An apparatus for purifying a fluid medium and comprising a continuous flow reactor defining a radiation chamber having two sides and through which chamber said medium flows, and an ultraviolet radiation source positioned to introduce ultraviolet radiation into the medium in said chamber at one of said sides, said chamber having a depth between said sides such that some of the incident radiation is not absorbed by the medium in said chamber, said reactor including first means forming a window transparent to ultraviolet radiation at the other of said sides of said chamber and, at the other side of said window from said chamber, second means forming a second reaction chamber for the flow of medium therethrough to be acted upon by the radiation passing through said window into said second chamber, said apparatus characterized by:

the relationship between said medium, the strength of the incident radiation and said depth is established such that the radiation received at said window is at least fifty percent of the incident radiation;



said reactor having a total number n, less than six, of successive series-connected reaction chambers and windows therebetween through which windows radiation will pass from one chamber to the next;

the relationship between the strength of the incident radiation, the character of the media in the chambers and the depth of the chambers being such that the total radiation absorbed by the media in all of the chambers does not exceed $(1-0.5^n)\cdot 100$ percent of the total incident radiation; and

the relationship between the rate of flow of the medium through all the reaction chambers and the radiation intensity effective in each reaction chamber being established so that the sum of the fractional doses applied to the medium in each one of the reaction chambers equals a predetermined minimum radiation dose.

4,317,042

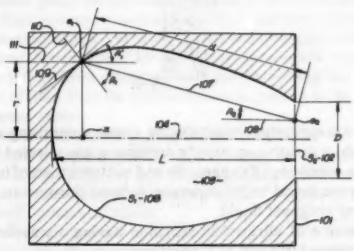
BLACKBODY SIMULATOR WITH UNIFORM EMISSIVITY

Frederick O. Bartell, 2636 W. Calle Puebla, Tuscon, Ariz. 85705

Filed Jun. 26, 1980, Ser. No. 163,305

Int. Cl.³ G21G *4/00*

U.S. Cl. 250—493 **36 Claims**



1. A blackbody simulator, comprising:

a core with a first side;

the core having an aperture on its first side to a cavity, the

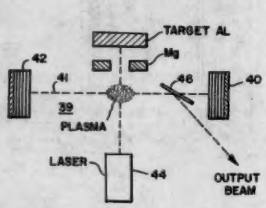
cavity being rotationally symmetrical about an axis and having a cone-like apex on the axis opposite the aperture, the cavity surface shaped so that the value of the projected solid angle of the aperture with respect to any point on the cavity surface is generally constant.

4,317,043

NORMAL INCIDENCE X-RAY REFLECTORS AND RESONANT CAVITIES FOR SUPPORTING LASER ACTION USING THE SAME

Alan E. Rosenbluth, Rochester, and James M. Forsyth, Pittsford, both of N.Y., assignors to The University of Rochester, Rochester, N.Y.

Filed Oct. 26, 1979, Ser. No. 88,699
Int. Cl.³ H05G *1/02*
U.S. Cl. 250—510 **17 Claims**



1. An x-ray reflector adapted to reflect x-rays having normal incidence to the surface thereof which comprises an array of layers arranged in successive groups, each of said groups including a plurality of layers, each said group of said array having at least one metal layer of monoatomic thickness in a direction normal to said surface, a first hydrocarbon molecular Langmuir-Blodgett layer having a first chain length, and a structure having at least one additional layer, selected from metal and hydrocarbon Langmuir-Blodgett layers, having a length in said direction different from said first chain length.

4,317,044

OZONE PRODUCTION APPARATUS

Vesper A. Vaseen, Wheatridge, Colo., assignor to Robert Dougan Construction Co., Denver, Colo.

Continuation-in-part of Ser. No. 885,956, Mar. 13, 1978, Pat. No. 4,182,663. This application Jun. 4, 1979, Ser. No. 44,963
Int. Cl.³ C01B *13/10*
U.S. Cl. 422—186.3 **3 Claims**

1. An apparatus for producing ozone comprising means to absorb or dissolve an oxygen containing gas selected from the group consisting of oxygen, air and mixtures thereof in an inert dielectric liquid under superatmospheric pressure to form an oxygen pregnant liquid,

a source of ultra-violet radiation having a wavelength between 1100 and 2200 angstrom,

transparent conduit means for exposing a stream of said oxygen pregnant liquid as a thin, non-turbulent sheet to said radiation to convert at least a portion of said oxygen to ozone, and

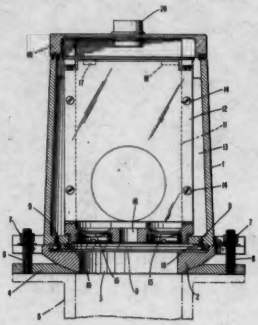
means for maintaining superatmospheric pressure throughout the apparatus.

4,317,045

FLAME MONITORING APPARATUS AND METHOD

Charles D. Coe; Donald Bell, and Michael R. Bray, all of Dronfield, England, assignors to Land Combustion Limited, Chesterfield, England

Continuation-in-part of Ser. No. 895,531, Apr. 11, 1978, abandoned. This application Aug. 12, 1980, Ser. No. 177,371
Claims priority, application United Kingdom, Apr. 12, 1977, 15103/77
Int. Cl.³ H01J *40/14*
U.S. Cl. 250—554 **7 Claims**



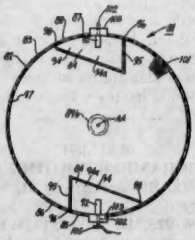
1. A method of monitoring a selected flame in a multi-burner furnace comprising positioning two arrays of photoelectric sensors, providing an optical path for the sensors of each array so that the line of sight of one sensor of one array will intersect the line of sight of one sensor of the other array, electronically scanning the two arrays to determine the sensors, one from each array, which give maximum correlation of output signal from the sensors and electronically locking onto those two sensors to monitor the selected flame.

4,317,046

ENERGY PRODUCING APPARATUS AND METHOD

Richard Holmberg, c/o Scientific Dye Works, 114 Troutman St., Brooklyn, N.Y. 11206

Filed Dec. 4, 1980, Ser. No. 213,246
Int. Cl.³ F01D *15/10*; F03C *2/00*
U.S. Cl. 290—1 R **27 Claims**



1. Energy producing apparatus comprising

an imbalance wheel adapted to be mounted for energy producing rotation about a substantially horizontal axis to provide a lower half wheel portion below such axis and an upper half wheel portion above such axis,

said wheel being substantially in rotational balance and defining at least two peripherally located and substantially

equally circumferentially distributed electrochemical cell zones for conversion of liquid to gas,

each zone having operatively opposed cathode means and anode means and operatively disposed imbalance imparting captive gas collection space means for collecting corresponding conversion gas therein,

liquid feed means for feeding liquid to the zones,

electrical conductor means arranged for selectively providing a circuit of current from a source to the corresponding cathode means and anode means of each successive zone when at a selective imbalance imparting lower location in the lower half wheel portion, and

gas delivery means arranged for delivering conversion gas from the corresponding collection space means of each successive zone when at the substantially uppermost location in the upper half wheel portion for recovery therefrom,

whereby successively at such lower location to convert liquid to gas in each zone and collect the gas in the collection space means thereof, and thereby displace a concordant volume of liquid therefrom and decrease the weight of the adjacent portion of the wheel thereat in relation to the remainder thereof, for creating an imbalance in the wheel sufficient for energy producing rotation thereof in addition to delivery of conversion gas via the delivery means for recovery.

4,317,047

ENERGY HARNESSING APPARATUS

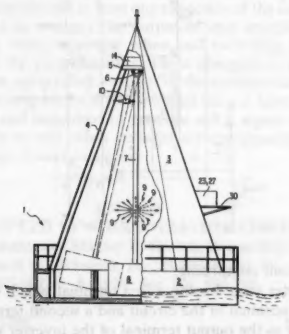
Fernando F. de Almada, Rua Cottinelli Telmo Residencia S. Jose, 11, S. Pedro do Estoril, Portugal

Filed Dec. 31, 1979, Ser. No. 108,463

Claims priority, application Portugal, Dec. 29, 1978, 68996[U]

Int. Cl.³ F03B *13/10, 13/12*

U.S. Cl. 290—53 **8 Claims**



1. In an apparatus for harnessing the energy derived from the undulatory motion of a body of water, including an assembly having a buoyancy sufficient for maintaining it afloat in the water, the improvement comprising

(a) a first structure mounted on the assembly and substantially following therewith multidirectional undulatory motions of the water; said first structure having generally upwardly oriented beams having upper ends connected at least indirectly to one another;

(b) a second structure mounted in said assembly for free movement in a plurality of planes with respect to said first structure; said second structure comprising a pendulum including a pendulum bar and a pendulum weight attached to the pedulum bar and a joint suspending said pendulum bar from the upper ends of said beams and permitting motion of said pendulum in said plurality of planes; said beams together enclosing said pendulum; each beam having an inward side oriented towards said pendulum;

(c) a device connected to said pendulum and to at least some of said beams for generating a pressure output in response to the force derived from the relative motions between said pendulum and said beams; said device comprising hydraulic cylinder units, each including a cylinder and a piston slidable therein; each said cylinder and the associated piston defining a work chamber accommodating hydraulic liquid and having an outlet opening constituting said pressure output; each said cylinder being connected to a separate beam in an abutting relationship with said inward side thereof and each said piston being connected with said pendulum for causing said pistons to pressurize hydraulic liquid in respective said work chambers by the force derived from the motion of said pendulum relative to said beams; and

(d) means coupled to said pressure output of said device for utilizing, at least indirectly, the energy derived from said pressure output.

4,317,048

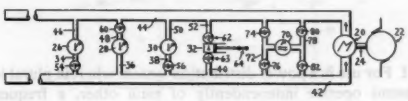
ENERGY FARM

Wellesley R. Kime, 8745 Appian Way, Los Angeles, Calif. 90046

Continuation-in-part of Ser. No. 158,415, Jun. 11, 1980. This application Jun. 30, 1980, Ser. No. 164,743

Int. Cl.³ F03B *13/10, 13/12;* H02P *9/04*

U.S. Cl. 290—53 **6 Claims**



1. An energy farm for the conversion of natural kinetic energy into electrical energy, comprising:

(A) a first common conduit for the flow of fluid;

(B) a second common conduit for the flow of fluid;

(C) a fluid pressure pump;

(D) a first bridging conduit communicating with the first and second common conduits and communicating with the fluid pressure pump;

(E) a second bridging conduit communicating with the first and second common conduit and communicating with the fluid pressure pump;

(F) a first check valve in the first bridging conduit located between the first common conduit and the fluid pressure pump for preventing back flow of fluid from the fluid pressure pump to the first common conduit;

(G) a second check valve in the first bridging conduit located between the fluid pressure pump and the second common conduit for preventing the back flow of fluid between the second common conduit and the fluid pressure pump;

(H) a first check valve in the second bridging conduit located between the first common conduit and the fluid pressure pump for preventing the back flow of fluid from the fluid pressure pump and the first common conduit;

(I) a second check valve in the second bridging conduit located between the second common conduit and the rotary type fluid pressure pump for preventing the back flow of fluid from the second common conduit to the fluid pressure motor;

(J) a natural kinetic energy receptor coupled to the fluid pressure pump for activating the pump for moving hydraulic fluid from the first common conduit to the second common conduit and generating hydraulic pressure in the second common conduit;

(K) a fluid pressure motor coupled to the first common conduit and the second common conduit for providing the passage of fluid between the second common conduit and the first common conduit and for generating rotational energy as fluid flows from the second common conduit to the first common conduit;

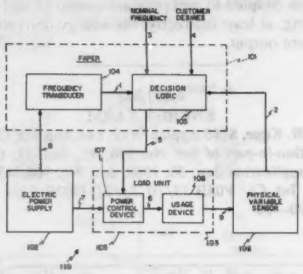
(L) an electricity generating unit coupled to the fluid pressure motor for converting the rotational energy to electrical energy.

4,317,049

FREQUENCY ADAPTIVE, POWER-ENERGY RE-SCHEDULER

Fred C. Schweppe, Carlisle, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Sep. 17, 1979, Ser. No. 76,019
Int. Cl.³ H02J *3/14*
U.S. Cl. 307—39 **6 Claims**



1. For use in a power distribution system wherein plural load systems operate independently of each other, a frequency adaptive power-energy re-scheduler for a said load system, that comprises, in combination:

frequency transducer means that senses deviation of electrical input frequency from nominal frequency and provides an output signal; and

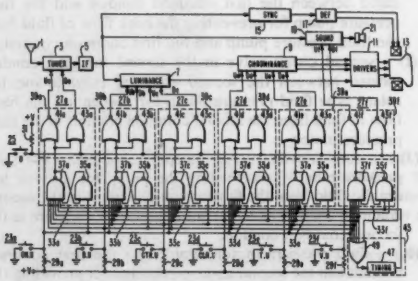
logic means connected to receive said output signal and operable to provide an output which combines physical variable measurements to a controlled load unit to affect the values of the physical variable so as to re-schedule the electric-energy consumption of the load unit on the basis of the values of said frequency.

4,317,050

USER CONTROL ARRANGEMENT FOR CONTROLLING A PLURALITY OF FUNCTIONS

Charles M. Wine, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 15, 1979, Ser. No. 84,714
Int. Cl.³ H03K *17/56*; H04N *5/44*
U.S. Cl. 307—541 **6 Claims**



1. In a system including means for increasing and decreasing a plurality of functions or properties in response to respective pairs of "up" and "down" command signals, user control apparatus comprising:

a plurality of individual function switches each for both selecting a respective individual function to be controlled and changing its sense in a predetermined sense;

a single common switch for changing all of said functions in the sense opposite to said predetermined sense; and

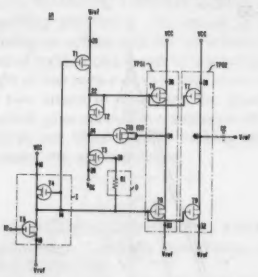
a plurality of command signal generating means each for generating a predetermined one of a respective pair of said "up" and "down" command signals in response to the operation of a respective one of said individual function switches and for generating the other one of said respective pair of said "up" and "down" command signals when said respective one of said individual function switches and said common switch are both operated.

4,317,051

CLOCK GENERATOR (BUFFER) CIRCUIT

Ernst H. Young, Jr., Center Valley, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 9, 1979, Ser. No. 82,583
Int. Cl.³ H03K *3/26*
U.S. Cl. 307—246 **10 Claims**



1. A circuit comprising:

an inverter stage having a first terminal which serves as an input terminal of the circuit and a second terminal which serves as the output terminal of the inverter stage;

capacitor circuit means having first and second terminals;

first, second, and third switching devices **T1**, **T2**, and **T3**, respectively, which each has a control terminal and first and second output terminals;

a totem pole stage having first and second input terminals and an output terminal;

a delay element coupled to the output of the inverter stage and to the control terminal of **T3**;

the output terminal of the inverter stage being coupled to the control terminal of **T1**, and to the second input terminal of the totem pole stage;

the second output terminal of **T1** being coupled to the first input terminal of the totem pole stage and to the first input terminal and the control terminal of **T2**;

the second output terminal of **T2** being coupled to the first terminal of the capacitor circuit means and to the first output terminal of **T3**; and

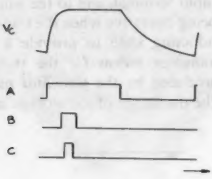
the output terminal of the totem pole stage being coupled to the second terminal of the capacitor circuit means.

4,317,052

APPARATUS FOR CONVERTING AN A.C. INPUT SIGNAL TO A RECTIFIED AND SMOOTHED D.C. SIGNAL

Darryl C. Morris, Concord, N.H., assignor to Northern Telecom, Inc., Nashville, Tenn.

Filed Jan. 8, 1980, Ser. No. 110,476
Int. Cl.[3] H03K 5/00; H02M 7/00
U.S. Cl. 307—261 11 Claims



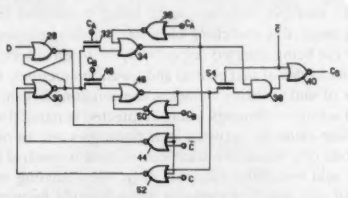
1. Apparatus for converting an a.c. input signal to a rectified and smoothed d.c. signal, comprising:
a precision rectifier circuit;
means for applying the a.c. input signal to an input of the precision rectifier circuit;
a smoothing filter including at least one capacitor;
means coupling an output of the precision rectifier circuit to an input of the smoothing filter;
a coupling capacitor;
an amplifier having an inverting input and an output;
means coupling an output of the smoothing filter via the coupling capacitor to the inverting input of said amplifier; and
switching means selectively operable to disconnect the input of the precision rectifier circuit from the a.c. input signal, to open-circuit said at least one capacitor of the smoothing filter, and to connect the output of said amplifier to its inverting input, whereby when said switching means is operated the coupling capacitor is charged to a voltage dependent upon offset voltages of the apparatus and when said switching means is not operated the a.c. input signal is rectified and smoothed to produce a d.c. signal in which errors due to said offset voltages are compensated for by the charge of said capacitor.

4,317,053

HIGH SPEED SYNCHRONIZATION CIRCUIT

Pern Shaw, Austin, and Stanley E. Groves, Round Rock, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 5, 1979, Ser. No. 100,785
Int. Cl.[3] H03K 19/08, 1/17
U.S. Cl. 307—269 10 Claims



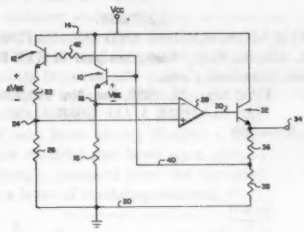
1. A high speed circuit for receiving an asynchronous signal and synchronizing said asynchronous signal with a system clock signal, comprising:
first logic means for generating a first signal in response to receipt of said asynchronous signal;
second means coupled to said first means for generating a second signal when the first signal occurs during a first level of said system clock signal;
third means coupled to said first means for generating a third signal when the first signal occurs during a second level of said system clock signal; and
fourth means coupled to said second and third means and to said system clock signal for generating a synchronized signal in response to the absence of either the second or third signals during said second level of said system clock signal.

4,317,054

BANDGAP VOLTAGE REFERENCE EMPLOYING SUB-SURFACE CURRENT USING A STANDARD CMOS PROCESS

Michael J. Caruso, Carrollton; David B. Hildebrand, Bedford, and Kul B. Ohri, Carrollton, all of Tex., assignors to Mostek Corporation, Carrollton, Tex.

Filed Feb. 7, 1980, Ser. No. 119,539
Int. Cl.[3] G05F 1/56
U.S. Cl. 307—297 19 Claims



1. A bandgap voltage reference for use with CMOS integrated circuits comprising:
first and second bipolar transistors having common collectors formed in an integrated circuit substrate;
a first resistor connected between the emitter of said first transistor and a ground potential node;
a second resistor connected between the emitter of said second transistor and a reference node;
a third resistor connected between said reference node and said ground potential node;
a differential amplifier having a positive input connected to said reference node and a negative input connected to said first transistor emitter, and an output coupled to bases of said first and second transistors, said output providing a temperature stabilized reference potential.

4,317,055

HIGH-VOLTAGE CIRCUIT FOR INSULATED GATE FIELD-EFFECT TRANSISTOR

Isao Yoshida, Hinodemachi; Minoru Nagata, Kodaira; Shikayuki Ochi, Akishima, and Hisao Katto, Hinodemachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 8, 1979, Ser. No. 36,972
Claims priority, application Japan, May 24, 1978, 53-61057
Int. Cl.[3] H03K 3/353, 17/687; H03F 3/16; H01L 29/78
U.S. Cl. 307—304 12 Claims

1. A high-voltage MOSFET (insulated gate field-effect transistor) circuit wherein n MOSFETs are connected in series by electrically connecting a drain of the m-th ($1 \leqq m \leqq n-1$) MOSFET and a source of the $(m+1)$-th MOSFET, a source and gate of the first MOSFET being respectively used as a source terminal and gate terminal of the MOSFET circuit, a drain of the n-th MOSFET being used as a drain terminal of the MOSFET circuit, and wherein divided voltages obtained by dividing a voltage applied across the source and drain terminals, by means of a first voltage divider circuit in which a plurality of resistors are connected in series are applied to gates of the second to n-th MOSFETs; the high-voltage MOS-

FET circuit being characterized by comprising means for holding the second to n-th MOSFETs in an "on" state by

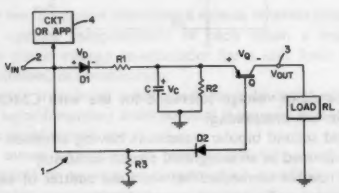
applying bias voltages from a bias voltage supply to the respective gates of said second to n-th MOSFETs.

4,317,056

VOLTAGE MONITORING AND INDICATING CIRCUIT

Steven L. Alberts, Kent, Wash., assignor to GTE Products Corporation, Stamford, Conn.

Filed Mar. 24, 1980, Ser. No. 133,230
Int. Cl.³ H03K *5/153*; G08B *21/00*
U.S. Cl. 307—350 **14 Claims**



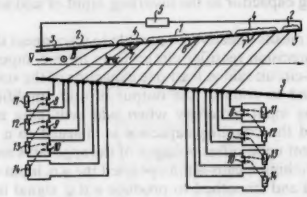
1. A voltage monitoring and indicating circuit, comprising:
an input terminal for receiving an input voltage;
an output terminal;
transistor means having a first electrode, a second electrode, and a third electrode coupled to the output terminal, said transistor means having a first conducting state during which no voltage is produced at its third electrode and at the output terminal and a second conducting state during which a voltage pulse is produced at its third electrode and at the output terminal;
storage means coupled to the first electrode of the transistor means;
circuit means coupled to the input terminal, to the storage means, and to the transistor means, said circuit means comprising:
first resistance means coupled in a series path between the input terminal and the first electrode of the transistor means;
a source of reference potential;
second resistance means coupled in parallel with the storage means and between the juncture of the first resistance means and the first electrode of the transistor means and the source of reference potential; and
discharge means coupled to the second electrode of the transistor means, to the input terminal, and to the source of reference potential;
said circuit means being operative when an input voltage is present at the input terminal to cause the storage means to be charged to a voltage and to cause the transistor means to operate in its first conducting state whereby no voltage is produced by the transistor means at its third electrode and at the output terminal;
said storage means being operative when it has been charged to a voltage by the circuit means and in response to a subsequent loss of the input voltage at the input terminal to discharge and to cause the transistor means to operate in its second conducting state, whereby an output pulse indicative of the loss of the input voltage is produced at the third electrode of the transistor means and at the output terminal; and
said discharge means of the circuit means including third resistance means coupled to the second electrode of the transistor means, to the input terminal, and to the source of reference potential, and being operative when the transistor means is in its second conducting state to provide a discharge path through the transistor means for the storage means, the output pulse produced by the transistor means being produced during the discharge of the storage means.

4,317,057

CHANNEL OF SERIES-TYPE MAGNETOHYDRODYNAMIC GENERATOR

Georgy P. Bazarov, ulitsa Komarova 12, kv. 20, Voronezh; Valentin I. Kovbasjuk, ulitsa Vavilova, 70, korpus 2, kv. 114, Moscow; Emma N. Kufa, ulitsa Elektrosignalnaya, 12, kv. 14, Voronezh, and Stanislav A. Medin, Leningradsky prospekt, 78, korpus 5, kv. 83, Moscow, all of U.S.S.R.

Filed Jun. 16, 1980, Ser. No. 159,815
Int. Cl.³ H02N *4/02*
U.S. Cl. 310—11 **2 Claims**

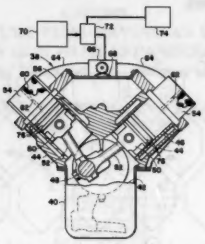


1. A channel of a series-type magnetohydrodynamic generator comprising: a central section; a plurality of sectionalized electrodes included in said central section; two transition sections each adjoining respective ends of said central section; another plurality of sectionalized electrodes included in said transition sections; two end sections each adjoining other ends of respective transition sections, each of said end sections including a continuous load electrode; a plurality of switching elements, each being inserted between adjacent electrodes of said end and transition portions; a plurality of relay-type limit voltage sensitive elements, each being connected in parallel with a respective switching elements, sensitive elements of the same type being inserted respectively between outermost adjacent electrodes of said central and transition sections; actuating organs of said sensitive elements, the actuating organs of some of said sensitive elements, being connected in parallel with said switching elements between load electrodes and an outermost electrode of a respective transition section to control the making of said switching elements only, the actuating organs of some of said sensitive elements being inserted between outermost adjacent electrodes of said central and transition sections to control the breaking of said switching elements inserted between the nearest adjacent pair of said electrodes, and the actuating organs of remaining sensitive elements being connected in parallel with said electrodes of said transition sections to control the making of the switching elements to which they are connected in parallel and to control the breaking of switching elements inserted between the nearest adjacent pairs of said electrodes on the side of said load electrode.

4,317,058
ELECTRO-MAGNETIC RECIPROCATING ENGINE

Sherman S. Blalock, Inola, Okla., assignor to Troy L. Cook, Broken Arrow; William C. Swisher and Mose Tiger, both of Tulsa, all of, Okla.

Filed Dec. 28, 1979, Ser. No. 108,220
Int. Cl.³ H02K 33/00
U.S. Cl. 310—24 9 Claims

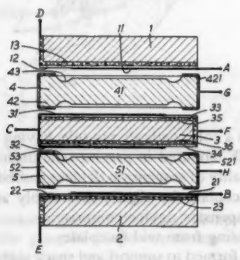


1. An electro-magnetic reciprocating engine comprising:
(a) an engine block for containing lubricant;
(b) at least one cylinder carried by the block and having an inner end in communication with the interior of the block and the lubricant;
(c) a piston reciprocally disposed in each cylinder, a permanent magnet carried by the piston and having poles in longitudinal alignment with the cylinder;
(d) drive means carried by the block and operably connected to each piston to convert reciprocal motion to rotary motion;
(e) an electro-magnet disposed at the outer end of each cylinder and substantially closing off said outer end of each cylinder, the axis of said electro-magnet being longitudinally aligned with the cylinder and including a pressure relief port at said outer end of the cylinder in communication with the outer end of the piston reciprocally carried therein;
(f) an electrical power source; and
(g) means for selectively intermittently polarizing the electro-magnet for creating a magnetic field about said piston to effect reciprocal movement of said piston within the cylinder.

4,317,059
ACCELERATION AND TEMPERATURE COMPENSATED PIEZOELECTRIC BI-RESONATOR

Raymond Besson, Besançon, France, assignor to Etat Francais, Paris, France

Filed Sep. 26, 1979, Ser. No. 79,239
Claims priority, application France, Oct. 9, 1978, 78 28728
Int. Cl.³ H01L 41/08
U.S. Cl. 310—361 2 Claims

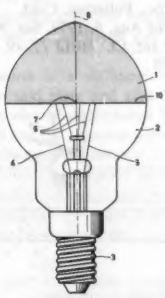


1. A piezoelectric bi-resonator having a piezoelectric body comprising two independent and similar piezoelectric crystal chips and having electrodes that do not adhere to the chips, said bi-resonator being characterized by:
a. a plate of dielectric material having opposite faces, each having a coating that provides one of a pair of electrodes, the electrodes of said pair being electrically connected with one another;
b. a pair of members of dielectric material, each having a face on which there is a coating that provides a further electrode, said members being respectively disposed at opposite sides of said plate and each having its further electrode in opposing spaced relationship to one of said pair of electrodes;
c. said crystal chips being at opposite sides of said plate, each being interposed between one of said pair of electrodes and one of said further electrodes and having an active portion which is spaced from both of the electrodes between which the chip is interposed;
d. said crystal chips being in positions and orientations such that their Y′ axes are opposite;
e. means defining peripheral rings surrounding and connected with the active portions of said crystal chips and cooperating with said plate and said members to maintain the spacings between said active portions and said electrodes and to maintain the chips in said positions and orientations, and
f. each of said faces having thereon a layer of electrical resistance material that heats upon passage of a current therethrough, insulated from the electrode on the same face by a layer of insulating material.

4,317,060
BOWL MIRRORED LAMP

John Fitzgerald, and Jan A. H. Kesseler, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 19, 1979, Ser. No. 86,564
Claims priority, application Netherlands, Oct. 30, 1978, 7810774
Int. Cl.³ H01J 3/14
U.S. Cl. 313—113 3 Claims



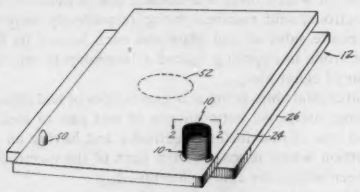
1. A bowl mirrored incandescent lamp having a lamp envelope which comprises a generally spherically curved mirrored bowl portion, an adjoining light-pervious portion provided with a lamp cap at its end remote from the bowl portion, and a filament accommodated in said lamp envelope near the center of c rvature of the mirrored bowl portion of the lamp envelope, characterized in that the filament is arranged asymmetrically with respect to the axis of the lamp envelope and surrounds said axis over an angle greater than 180° in such a manner that it does not coincide at any point with the image of the filament formed by the mirrored bowl portion of the lamp envelope.

4,317,061

PRESSURE COMPENSATING DEVICE FOR A PLASMA DISPLAY PANEL

Charles Mendelsohn, Monsey, N.Y., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 17, 1979, Ser. No. 104,606
Int. Cl.[3] H01J 17/22, 17/49
U.S. Cl. 313—174 9 Claims



1. A pressure compensating device for use with a plasma display panel, said panel including an ionizable gas disposed in a sealed envelope between a pair of sidewalls at least one of which is transparent, comprising:

a pressure responsive means secured to one of said sidewalls and having a first position in an unexpanded state, and a second position in an expanded state,

means providing a passageway from said sealed envelope within said plasma panel to said pressure responsive means thereby allowing said gas to flow therebetween, and

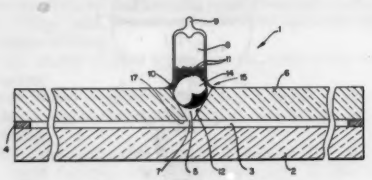
whereby said pressure responsive means moves from said first position to said second position in response to a positive pressure differential across said sidewalls of said panel thereby providing a space into which a portion of said ionizable gas flows thus maintaining said positive pressure differential within predetermined limits.

4,317,062

VALVE MEANS AND MERCURY RESERVOIR FOR GAS DISCHARGE DISPLAY

Roger A. Frankland, Scottsdale, Ariz., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Aug. 6, 1979, Ser. No. 64,156
Int. Cl.[3] H01J 17/49, 61/28
U.S. Cl. 313—175 6 Claims



1. A display device comprising:

a base plate with an opening;

a face plate sealed to the base plate in such a manner as to create an envelope between the two plates;

one or more cathode and anode electrodes within the envelope;

an ionizable gas contained within the envelope;

a reservoir providing chamber secured to the base plate adjacent the opening in the base plate, the chamber containing liquid mercury; and

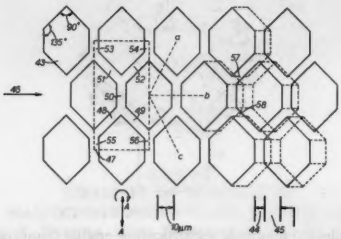
movable valve means seating in the opening of the base plate, said valve means blocking the passage of liquid mercury and allowing the passage of mercury vapor from said chamber to said envelope via said opening.

4,317,063

PYROELECTRIC DETECTORS

David J. Pedder, Oxford, and David J. Warner, Northampton, both of England, assignors to Plessey Handel und Investments AG, Zug, Switzerland

Filed Oct. 25, 1979, Ser. No. 88,169
Claims priority, application United Kingdom, Oct. 28, 1978, 42361/78; Oct. 28, 1978, 42362/78; Oct. 28, 1978, 42363/78
Int. Cl.[3] H01J 29/45
U.S. Cl. 313—388 8 Claims



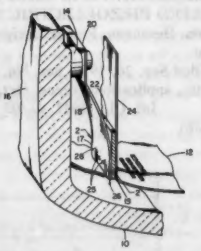
1. A reticulated pyroelectric target for the detection of thermal radiation and having a target surface, and comprising a plurality of islands of pyroelectric material disposed on said target surface and separated by a plurality of grooves, each said groove adjacent each said island forming a portion of a boundary of each said island, each said groove being limited in length to and coinciding with said portion of said boundary of each said island, and wherein each groove in respect to any one said island forms, at its junction with adjacent grooves of adjacent said islands, all non-straight lines with the adjacent grooves of adjacent said islands, whereby to minimize lines of weakness and improve structural strength over the target surface.

4,317,064

SHADOW MASK SUSPENSION SYSTEM

Lawrence W. Dougherty, Sleepy Hollow, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Oct. 15, 1979, Ser. No. 84,708
Int. Cl.[3] H01J 29/07
U.S. Cl. 313—406 2 Claims



1. For use in a color cathode ray tube having a faceplate and a shadow mask mounted in precise relationship to said faceplate by a plurality of suspension devices spaced on the periphery of said faceplate for rigidly and stably suspending said mask, each suspension device comprising:

a stud extending from said faceplate;

a leaf spring formed to support and space said mask in proper relationship to said faceplate, said spring having a first end formed for detachable engagement to said stud;

a bracket attached to said mask and having a seat for receiving in permanent attachment the second end of said spring;

said suspension device being characterized by said spring and said bracket having configurations at their interface which are such that the lateral edges of said spring are compressively preloaded against said bracket to provide a wide stance which enhances the stability of the suspension of said mask in relation to said faceplate.

4,317,065

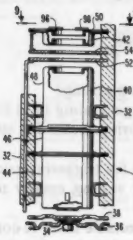
COLOR PICTURE TUBE HAVING AN IMPROVED ELECTRON GUN WITH EXPANDED LENSES

Richard H. Hughes, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 28, 1980, Ser. No. 125,648

Int. Cl.³ H01J *29/50*

U.S. Cl. 313—414 **4 Claims**



1. In a color picture tube having an inline electron gun for generating and directing a plurality of electron beams, along coplanar paths toward a screen of said tube, said gun including a main focus lens for focusing said electron beams, the improvement comprising

the main focus lens being formed by two spaced electrodes, each electrode including a member having a plurality of apertures therein equal to the number of electron beams and a lens plate spaced from said member which is electrically connected to said member, the lens plates of the two electrodes being adjacent and spaced from each other and being located between the members of the electrodes having a plurality of apertures therein, each lens plate including a single large hole therein formed by a plurality of overlapping apertures equal to the number of electron beams.

4,317,066

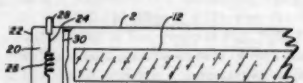
GASEOUS DISCHARGE LAMP HAVING NOVEL ELECTRODE MOUNTINGS

Thomas J. Hammond, Penfield, and Karl A. Northrup, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 4, 1980, Ser. No. 118,337

Int. Cl.³ H01J *61/36*

U.S. Cl. 313—493 **7 Claims**



1. A low pressure gaseous discharge lamp comprising an elongated tubular glass envelope containing an ionizable medium therein; and

a pair of filament electrodes sealed within the envelope at opposite ends thereof, each of said electrodes having a pair of electrical terminal connections projecting through said elongated envelope surface.

4,317,067

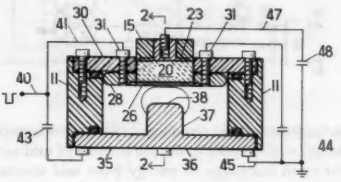
DIELECTRIC SURFACE ELECTRICAL DISCHARGE DEVICE

William A. Fitzsimmons, and Louis A. Rosocha, both of P.O. Box 5321, Madison, Wis. 53705

Filed Apr. 11, 1980, Ser. No. 139,288

Int. Cl.³ H01S *3/091;* H05B *41/02*

U.S. Cl. 315—150 **18 Claims**



9. An electrical discharge device adapted to provide a uniform glow type discharge, comprising:

(a) a first electrode adapted to provide a uniform area source of ultraviolet wave length photons, comprising:

(1) a solid core formed of dielectric material having a peripheral surface;

(2) a grid of electrical conductors mounted on a portion of the peripheral surface of said dielectric core; and

(3) a conductive plate mounted on a portion of the peripheral surface of said dielectric core which is spaced away and electrically isolated from said grid, the material of which said dielectric core is formed and the thickness of said dielectric core between said grid and said plate being selected such that a potential difference can be applied between said grid and said plate which will initiate an electrical discharge between said grid conductors and the adjacent surface of said dielectric core without electrical breakdown of said core;

(b) a second electrode; and

(c) an enclosure supporting said first and second electrodes in spaced relation with a discharge gap defined between them;

whereby the application of a sufficient voltage potential difference between said plate and grid of said first electrode will cause an electrical discharge between the conductors of said grid and the adjacent surface of said dielectric core, without the need for external heating of said first electrode, with a resulting release of ultraviolet wave length photons into the discharge gap to yield two dimensionally uniform ionization of a gas in the gap.

4,317,068

PLASMA JET IGNITION SYSTEM

Michael A. V. Ward, Lexington, and Tai T. Wu, Cambridge, both of Mass., assignors to Combustion Electromagnetics, Inc., Arlington, Mass.

Filed Oct. 1, 1979, Ser. No. 80,690

Int. Cl.³ H05B *37/02, 39/04, 41/36*

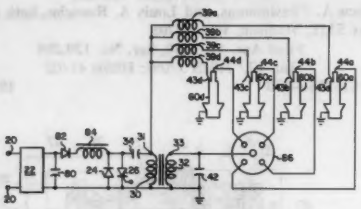
U.S. Cl. 315—209 CD **10 Claims**

1. In an electrical ignition system including a transformer, means for coupling an electrical energy source to the primary winding of said transformer, and means for coupling the secondary winding of said transformer across the electrodes of a main ignition spark gap, the improvement comprising:

an output capacitor connected in parallel to said secondary winding; and

a by-pass circuit including, in series connection from a high

voltage portion of said primary winding to a high voltage portion of said secondary winding, an inductor and an auxiliary spark gap one of the electrodes of which constitutes a corresponding one of the electrodes of the main ignition spark gap,



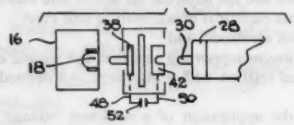
the parameters of said circuit and said output capacitor being chosen with respect to the parameters of said system such that upon discharge of energy from said source through said transformer sufficient to cause dielectric breakdown across said main spark gap, said auxiliary gap must breakdown prior to breakdown of said main gap.

4,317,069

MEANS AND METHOD FOR CONTROLLING LUMEN OUTPUT AND POWER CONSUMPTION OF PHOSPHOR EXCITABLE LAMPS

David E. Burgess, P.O. Box 6608, Torrance, Calif. 90504

Filed Jan. 29, 1980, Ser. No. 116,573
Int. Cl.³ H05B *41/16*
U.S. Cl. 315—227 R **59 Claims**



1. A means for use with and for limiting power consumption and lumen output of a conventional phosphor excitable lamp connected to a source of power for operation of same without any appreciable loss in efficiency of operation, said means comprising:

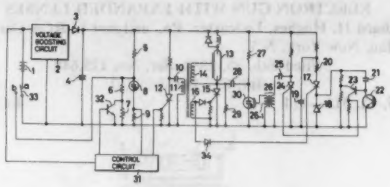
a capacitive means operatively physically interposed between a conductive end terminal of said conventional phosphor excitable lamp and a socket which received the end terminal of said lamp, said capacitive means also being electrically connectable to said one conductive end terminal of said phosphor excitable lamp and a conductive terminal in said socket and thereby effectively electrically interrupting the connection between the conductive end terminal of the lamp and end terminal of the socket so as to be electrically interposed between said same conventional lamp and source of power in a series connection and so that said lamp remains in circuit relation to said source of power, said capacitive means being selected with a capacitive value so that the lumen output at the reduced level and the power consumption is reduced without substantially changing the voltage to the lamp and without any appreciable effect on the efficiency of the operation of said lamp or source of power.

4,317,070

CIRCUITS FOR FLASH EQUIPMENT

Ryuji Tokuda; Yukio Mashimo, both of Tokyo, and Masanori Uchidoi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 9,596, Feb. 5, 1979, abandoned. This application Jan. 21, 1981, Ser. No. 226,709
Claims priority, application Japan, Feb. 7, 1978, 53-12741
Int. Cl.³ H05B *41/26*; G03B *15/05*
U.S. Cl. 315—241 P **11 Claims**



1. A flash device comprising:

(a) flash means for generating light for flash use;

(b) flash energy storing means for storing light energy for flash use;

(c) a trigger circuit for triggering said flash means;

(d) a capacitor for storing energy to actuate said trigger circuit;

(e) a terminal connectable to an X contact of a camera, said X contact arranged to be moved from a first state to a second state by a shutter release operation;

(f) applying means for applying said energy stored in said capacitor to said trigger circuit, said applying means coupled to said terminal and being rendered operative to apply the energy stored in the capacitor to the trigger circuit when the X contact is set to the second state;

(g) inhibiting means for inhibiting energy storage in said capacitor;

and

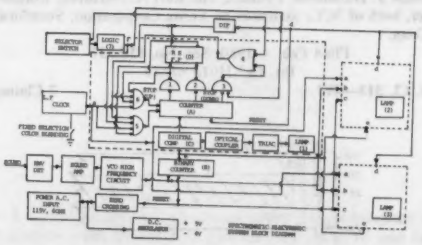
(h) means for rendering said inhibiting means operative after a predetermined time interval from the setting of said X contact to said second state.

4,317,071

COMPUTERIZED ILLUMINATION SYSTEM

Peter S. E. Murad, 16183 Caribou St., Fountain Valley, Calif. 92708

Filed Nov. 2, 1978, Ser. No. 957,216
Int. Cl.³ H05B *37/02, 39/08*
U.S. Cl. 315—312 **8 Claims**



1. An illumination control system for a plurality of lamps and optical elements arranged to emit at least three different colors of lights, comprising:

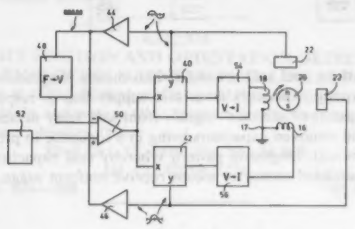
a high frequency clock; a first binary counter connected to the output of the high frequency clock; a low frequency clock; and, a plurality of electronic control circuits, each

individual control circuit controlling the emission of one color of light, each control circuit comprising a second binary counter connected to the output of the low frequency clock, a digital comparator for comparing the counts in the first and second binary counters, and means for controlling the intensity of the emission of said one color of light in response to the output of said comparator.

4,317,072
ELECTRIC MOTOR WITH ROTATIONAL SPEED REGULATION

Sven K. L. Goof, Gl. Strandvej 236B, DK-3050 Humlebaek, and Jens S. Hansen, Hjortevaenget 501, DK-2980 Kokkedal, both of Denmark

Filed Dec. 5, 1979, Ser. No. 100,430
Claims priority, application Denmark, Dec. 7, 1978, 5541/78
Int. Cl.³ H02P *6/02*
U.S. Cl. 318—138 **7 Claims**



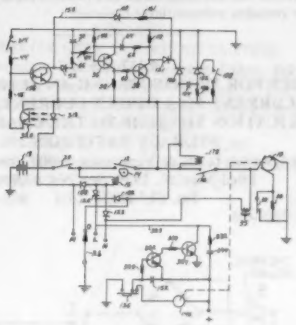
1. An electric motor having rotational speed regulation and comprising a rotatably journaled cylindrical rotor (10) including a permanent magnetic material (11); a stator (14) having at least one exciting or driving winding (16, 18); rotor position detecting means; and a control and regulating circuit, said rotor position detecting means comprising at least one sensor or transducer unit (22) generating an output signal which varies synchroniously with the instantaneous position of said rotor, said output signal being supplied, to a two input multiplier unit (40 or 42) as one input signal (y) thereof, said multiplier unit multiplying the signal with a factor determined by the other input signal (x) of said unit, whereafter said multiplied signal is supplied to said exciting winding through a power amplifier (54 or 56), characterized in that said sensor or transducer signal also is supplied to a pulse generator (44 or 46), generating a pulse output signal having a pulse repetition rate which is uniquely associated with and directly determined by the period of said varying sensor or transducer signal, and in that said pulse signal is supplied to a frequency-to-voltage converter unit (48) which provides an output signal being supplied to a differential amplifier (50) as one input signal thereof, the other input signal being a reference voltage, and the output signal of said amplifier being supplied to said multiplier unit as said other input signal (x) thereof.

4,317,073
WINDSHIELD WIPER CONTROL SYSTEM

Henry Blaszkowski, P.O. Box 114, Southfield, Mich. 48075

Division of Ser. No. 765,123, Feb. 3, 1977, Pat. No. 4,131,834, which is a continuation of Ser. No. 549,810, Feb. 13, 1975, abandoned, which is a continuation-in-part of Ser. No. 302,940, Nov. 1, 1972, abandoned, which is a continuation-in-part of Ser. No. 19,443, Mar. 13, 1970, abandoned, Continuation-in-part of Ser. No. 776,487, Nov. 18, 1968, abandoned. This application Sep. 18, 1978, Ser. No. 943,195
Int. Cl.³ H02P *5/16*
U.S. Cl. 318—483 **1 Claim**

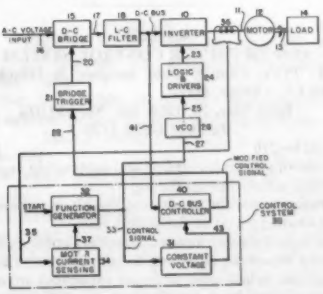
1. An automatic control system for a windshield wiper mechanism driven by an electric motor comprising: an electronic control circuit having moisture activated means therein, said motor being energized in response to activation of the moisture activated means and being de-energized in response to de-activation of the moisture activated means; a manually operable switch member movable from an off position to a predetermined on position for energizing the electronic control circuit so as to condition the circuit to produce an output when the moisture activated means is activated, said electronic control circuit also including a capacitance means and a means momentarily contacted by said switch member for substantially immediately charging said capacitance means irrespective of the condition of the moisture activated means when said switch is moved from said off position to said on position, said circuit, when energized by actuation of said switch member, responding to the charge of the capacitance means to produce an output of predetermined duration and thereby energize the wiper motor for said duration until the capacitance means discharges whereby, when said switch member is moved to said on position, the motor is energized for said predetermined time period and thereafter the motor operates in response to activation of the moisture activated means.



4,317,074
INVERTER-MOTOR SYSTEM WITH DIFFERENT CONTROL CHARACTERISTICS FOR INVERTER VOLTAGE AND FREQUENCY

Richard A. Erth, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Sep. 12, 1979, Ser. No. 75,291
Int. Cl.³ H02P *5/34*
U.S. Cl. 318—808 **10 Claims**



1. A control system for an inverter connected to drive an electric motor, the inverter providing an a-c voltage over an output line to the motor upon receipt of a d-c voltage over a d-c bus, and a controllable d-c bridge connected to supply the d-c voltage to the d-c bus, which control system comprises:

circuit means connected to provide a control signal varying as a function of the level of the motor current; and

a constant voltage circuit, coupled to the circuit means, connected to provide a modified control signal for regulating the operation of the d-c bridge and thus regulating the amplitude of the d-c bus voltage, to regulate the amplitude of the inverter a-c output voltage in a manner such that as the inverter is reduced from 100% load to a reduced operating level substantially below 100% load, the frequency of the inverter a-c output voltage is gradually reduced but the amplitude of the inverter a-c output voltage remains substantially constant.

4,317,075

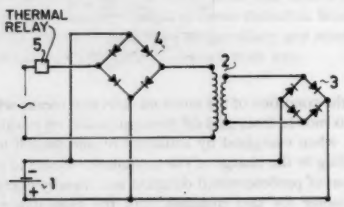
DEVICE FOR TRANSFORMING AN ALTERNATING CURRENT TO A DIRECT CURRENT, AND APPLICATION THEREOF TO THE CHARGING OF STORAGE BATTERIES

Francois Guerbet, 6, rue de Vergennes, 78000 Versailles, France

Filed May 30, 1979, Ser. No. 43,900

Int. Cl.³ H02J 7/06

U.S. Cl. 320—53 **8 Claims**



1. Device for transforming an alternating current supply of a given voltage to direct current of a desired voltage, comprising at least one transformer having a primary which is part of a primary circuit and a secondary which is part of a secondary circuit, and comprising at least one rectifying element which is in the secondary circuit and is connected in series with the secondary of said at least one transformer; means for direct application and rectification of the alternating current in series with the primary of said at least one transformer and connected to the output of said at least one rectifying element in said secondary circuit, and said means being adapted to divert and rectify a part of the alternating current supply in the primary circuit and deliver the rectifying current to the secondary circuit at the output of said at least one rectifying element such that said resulting current has the same direction as the secondary current leaving said at least one rectifying element.

4,317,076

POWER FACTOR CONTROL SYSTEM

Arthur L. Price, Canton, Ohio, assignor to Hilscher-Clarke Electric Co., Canton, Ohio

Filed Mar. 20, 1980, Ser. No. 132,074

Int. Cl.³ G05F 1/70

U.S. Cl. 323—210 **10 Claims**

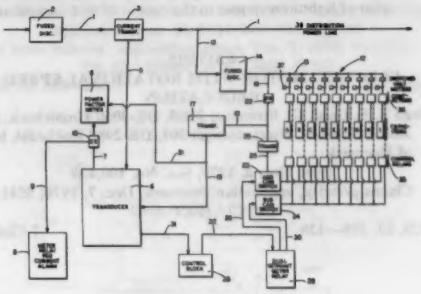
1. A control system for adding and subtracting capacitors to an electrical supply line including:

(a) sensing means for generating signals in response to the load characteristic of the supply line;

(b) dual setpoint relay means operatively connected with the sensing means for receiving the signals generated thereby to indicate when more or fewer capacitors are needed on the supply line by generating "add" and "subtract" signals upon one of the setpoints being reached;

(c) a plurality of contactor means each associated with a capacitor for electrically connecting or disconnecting said capacitors to or from the supply line; and

(d) first and second cam timer stepping switch means operatively connected to the dual setpoint relay means and controlling the contactor means, said first switch means progressively adding capacitors on the electrical supply line in response to capacitor "add" signals from the relay means, with said added capacitors being the next available capacitors in a sequence to provide a first-in, longest-out



pattern, and said second switch means progressively removing capacitors from said supply line in response to capacitor "subtract" signals from said relay means, with said removed capacitors being in a sequence to provide a first-out, longest-in pattern whereby said capacitors and associated contactor means receive uniform usage.

4,317,077

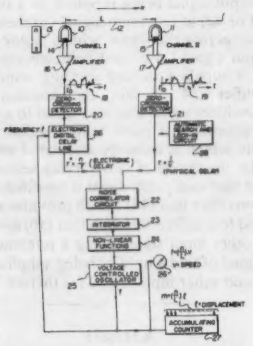
TRANSDUCER FOR MEASURING THE VELOCITY OR DISPLACEMENT OR BOTH OF FERROMAGNETIC MATERIAL

Cornelis M. G. Zwarts, Touraine, Canada, assignor to Canadian Patents & Development Limited, Ottawa, Canada

Filed Mar. 24, 1980, Ser. No. 133,412

Int. Cl.³ G01P 3/66

U.S. Cl. 324—179 **4 Claims**



1. A transducer for measuring the velocity or displacement or both of ferromagnetic material comprising:

(a) first and second magnetic read-heads positioned close to but not contacting the magnetic element whose relative velocity or displacement or both is to be measured with the two read-heads located a fixed distance apart in the direction of travel of the element,

(b) magnetic means positioned close to the magnetic element ahead of the first and second read-heads in the direction of travel of the element for increasing the magnetic surface noise levels of the material of the magnetic element,

(c) amplifiers connected to the two read-heads for amplifying the random voltage noise signals induced in the read-

heads, said signals being substantially identical with one being delayed in time with respect to the other,

(d) zero-crossing detectors connected to the outputs of the amplifiers,

(e) means for correlating the noise signals obtained from the zero-crossing detectors and providing an output frequency signal,

(f) an electronic digital delay line circuit connected between the zero-crossing detector of the first read-head and the means for correlating the noise signals,

(g) feedback means for applying the output frquency signal to the electronic digital delay line circuit to control the amount of delay such that it is equal to the physical delay produced in the signal from the second read-head, said delay being relative to the velocity of the magnetic element, and

(h) means for measuring the frequency or number or both of the cycles of the output frequency signal to give an indication of the relative velocity or displacement or both of the magnetic element.

4,317,078

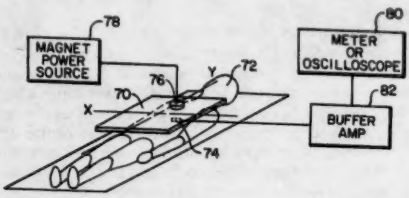
REMOTE POSITION AND ORIENTATION DETECTION EMPLOYING MAGNETIC FLUX LINKAGE

Herman R. Weed, Columbus, Ohio, and Ram M. Engira, Ludhiana, India, assignors to Ohio State University Research Foundation, Columbus, Ohio

Filed Oct. 15, 1979, Ser. No. 84,869

Int. Cl.³ G01B 7/14

U.S. Cl. 324—208 **32 Claims**



1. The process for determining the location and orientation in space of a magnetic field responsive sensor having an output signal in the presence of a magnetic flux linkage comprising the steps of:

defining a plane within which are established first and second intersecting reference axes for deriving the position of said sensor with respect to said axes;

providing a magnetic field source movable with respect to said plane to derive alternating magnetic flux fields;

effectively moving said magnetic field source parallel to said first reference axis and determining, from said sensor output signal, locations representing a first null point of substantially no said flux linkage, those first and second locations on each side of said first null point representing maximum said flux linkage and the magnitudes of said sensor output signal values at said first and second locations;

effectively moving said magnetic field source parallel to said second reference axis and determining, from said sensor output signal, locations representing a second null point of substantially no said flux linkage, those third and fourth locations on each side of said second null point representing maximum said flux linkage and the magnitudes of said sensor output signal values at said third and fourth locations;

determining said sensor position geometrically most proximate said first axis as a function of said first null point location and the magnitude of the output difference between said sensor output signal values at said first and second locations;

determining said sensor position geometrically most proximate said second axis as a function of said second null point location and the magnitude of the output difference between said sensor output signal values at said third and fourth locations; and

determining the geometrically most proximate distance of said sensor from said plane as a function of the location of one of said null points, an adjacent location of maximum said flux linkage and a corresponding said difference between said magnitudes of said sensor output values associated with a given one of said first or second axes.

4,317,079

BURIED CABLE LOCATING SYSTEM

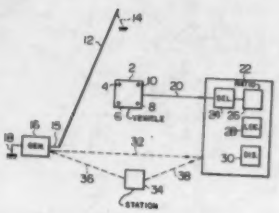
Kazuomi Yamamura, Yokohama; Takasuke Fukui, Tokyo; Yoshinao Iwamoto, Fujimi; Yuichi Shirasaki, Tokyo, and Masayuki Fujise, Yamato, all of Japan, assignors to Kokusai Denshin Denwa Co. Ltd., Tokyo, Japan

Filed Sep. 4, 1979, Ser. No. 72,282

Claims priority, application Japan, Sep. 4, 1978, 53/107463

Int. Cl.³ G01V 3/11, 3/165, 3/38

U.S. Cl. 324—326 **7 Claims**



1. A cable detecting system for searching of an electrical cable in which an electrical current flows comprising non-directional flux measurement means located near the cable for measuring the flux from said electric current at four vertex points said points forming a horizontal square plane, means coupled to said flux measurement means for providing squared amplitude ratios of each of said magnetic flux to a selected one of said magnetic flux, and means responsive to said amplitude ratios for determining distance to the cable from center of said four vertex points, angle between a transverse direction to the cable and extension of a diagonal line from said four vertex points, and depth between the cable and said horizontal square plane, wherein said distance, said angle and said depth each have a mathematical relationship of said amplitude ratios.

4,317,080

SIGNAL MONITOR SYSTEM

William F. Acker, Seminole, Fla., assignor to Honeywell Inc., Minneapolis, Minn.

Division of Ser. No. 829,705, Sep. 1, 1977, Pat. No. 4,207,523.

This application Dec. 12, 1979, Ser. No. 102,601

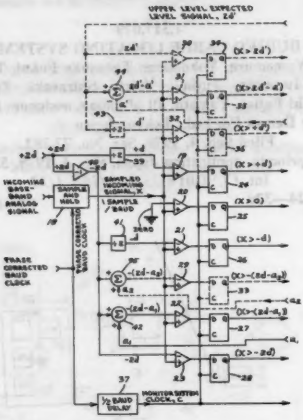
Int. Cl.³ H03K 5/153, 5/24

U.S. Cl. 328—151 **3 Claims**

1. An input signal amplitude range classifier for classifying amplitude values of an input analog signal into amplitude ranges, said classifier providing an indication as to whether a sample value of said input analog signal occurs within one of a plurality of input signal amplitude ranges, said classifier comprising:

a sample and hold means, adapted to receive said input analog signal at an input thereof, and which has a sample and hold means output, said sample and hold means being capable of providing, for a holding period, a data sample of said input analog signal at said sample and hold means output, said data sample having an amplitude which is free of further influence by said input analog signal during said holding period;

a plurality of comparator means each having a comparison input, a reference input and a comparator means output, each said reference input adapted to have a reference signal applied thereto, each said comparison input being connected to said sample and hold means output, and each said comparator means being capable of providing a comparator means output signal level shift at said comparator means output thereof when a said data sample sufficiently differs from said reference signal corresponding to said comparator means; and



a plurality of utilization means each having a utilization input and an enabling input with there being one of said utilization means corresponding to each one of said comparator means, each said utilization means input being connected to its corresponding said comparator means output, each said enabling input adapted for having an enabling signal applied thereto after a delay period which begins at that point in time when said holding period begins, and each said utilization means being capable of responding, at least completely, to a said comparator means output signal level shift only after said enabling signal is applied to said enabling input thereof.

4,317,081

SINGLE-ENDED PUSH-PULL POWER AMPLIFIER HAVING IMPROVED HIGH FREQUENCY CHARACTERISTICS

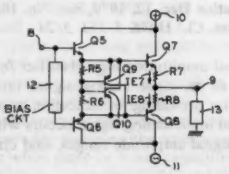
Toshio Kobayashi, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 16, 1979, Ser. No. 85,417

Claims priority, application Japan, Oct. 16, 1978, 53-127159

Int. Cl.³ H03F *3/30*

U.S. Cl. 330—268 **15 Claims**



1. A power amplifier comprising first and second transistors having emitter-collector paths connected in series, third and fourth transistors individually connected to said first and second transistors respectively in order to form equivalent unit transistors, means for applying an input signal to an amplifier composed of said first to fourth transistors, means for deriving an output from an electrical path interconnecting said first and second transistors, first and second resistive elements each having one of its ends connected to individually associated bases of said first and second transistors, and fifth and sixth transistors individually associated with said first and second resistive elements, said fifth and sixth transistors having their bases connected respectively to the other ends of said first and second resistive elements, and said fifth and sixth transistors having their respective emitter-collector paths connected in parallel with each other between the bases of said first and second transistors.

4,317,082

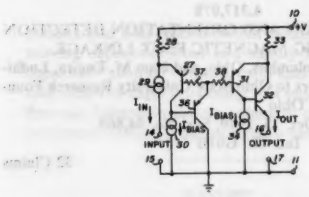
CURRENT MIRROR CIRCUIT

William H. Gross, Sunnyvale, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Nov. 6, 1978, Ser. No. 957,777

Int. Cl.³ H03F *3/04*

U.S. Cl. 330—288 **8 Claims**



1. A current mirror circuit comprising:

first and second power supply rails;

super diode means coupled between said first and second power supply rails, said super diode means comprising a first transistor having emitter, base and collector terminals, and a second transistor connected as an emitter follower having an input coupled to said first transistor collector and an output coupled to said first transistor base whereby said first transistor acts as a super diode;

means for current biasing said super diode means;

means for coupling a signal input current in shunt with said super diode means;

a composite complementary transistor pair having a signal input terminal coupled to said super diode means and a pair of controlled conduction terminals, one of said controlled conduction terminals being coupled to said first power supply rail and the other of said controlled conduction terminals providing a signal output current; and

means for current biasing said composite pair whereby said signal output current mirrors said signal input current.

4,317,083

BIAS ADJUSTMENT RESPONSIVE TO SIGNAL POWER

William M. Boyd, Washington, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 30, 1979, Ser. No. 98,926

Claims priority, application United Kingdom, Mar. 19, 1979, 09624/79

Int. Cl.³ H03F *3/24*

U.S. Cl. 330—296 **3 Claims**

1. An improved base-emitter bias voltage correction arrangement for a power transistor adapted for processing signals carrying modulation which produces a varying average power level, which modulation perturbs the base-emitter offset voltage of said transistor and results in increased distortion, the arrangement comprising:

bias means having a first input terminal coupled with the base-emitter junction of the transistor and also having an output terminal, said first input terminal of said bias means being coupled to a voltage source for producing a base-

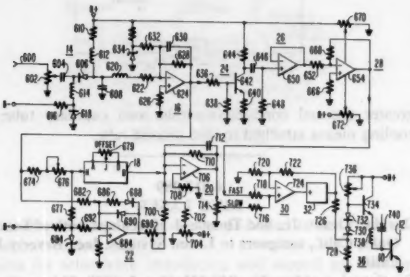
emitter bias voltage for biasing said transistor into a low-distortion conduction condition, said output terminal coupling said base-emitter bias voltage to said base-emitter junction for maintaining said base-emitter bias voltage at low frequencies notwithstanding the effects of application of input signals to said base-emitter junction;

the improvement comprising;

envelope detection means coupled to the signal path for producing a baseband replica of the modulation;

a second input terminal of said bias means;

signal processing means coupling said envelope detection



means with said second input terminal of said bias means for processing said replica of said modulation for producing a second bias control signal; and

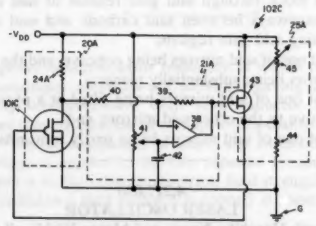
wherein said improvement further lies in that said second bias control signal coupled to said second input terminal of said bias means is superposed upon said base-emitter bias voltage thereby varying said base-emitter bias voltage as a function of said modulation for compensating said base-emitter bias voltage for the changes in the base-emitter offset voltage resulting from the power changes resulting from said modulation whereby said low-distortion conduction condition is maintained.

4,317,084

OSCILLATOR THAT INCLUDES A CHARGE-FLOW TRANSISTOR

Stephen D. Senturia, Boston, and Kou Togashi, Cambridge, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Sep. 17, 1979, Ser. No. 76,038
Int. Cl.³ H03B *25/00*
U.S. Cl. 331—57 **14 Claims**



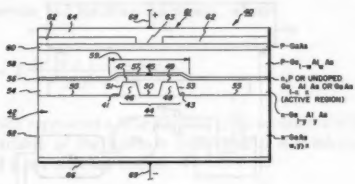
1. An oscillator that comprises, in combination, an inverter logic element comprising the combination of a charge-flow transistor and a load element, and a Schmitt trigger connected to receive as input the output of the logic element and to provide an output which is fed back as input to the logic element, said Schmitt trigger being operable in response to the input thereto to provide periodic TURN-ON and TURN-OFF of the logic element, said charge flow transistor comprising: a semiconductor substrate, having formed therein a source region and a drain region, the source and drain regions being situated in the substrate such that a sensitive channel region separates them from each other; a gate insulator situated above the sensitive channel region of the substrate; and a gate means comprising high conductive member situated far enough remote from the channel region so that charge thereon does not directly affect the channel region and a gate material having some conductance electrically connected with said highly conductive member to permit charge-flow therebetween, whereby when a charge is applied to the highly conductive member, current will flow in the channel at a rate dependent on the impedance of the material, said charge flow transistor being operable to cause inversion and to provide a circuit delay in which the TURN-ON and TURN-OFF time are of comparable orders of magnitude.

4,317,085

CHANNELED MESA LASER

Robert D. Burnham, Los Altos Hills; Donald R. Scifres, Los Altos, and William Streifer, Palo Alto, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 12, 1979, Ser. No. 74,685
Int. Cl.³ H01S *3/19*
U.S. Cl. 372—50 **41 Claims**



1. In a heterostructure semiconductor laser comprising a plurality of contiguous layers of semiconductor material on the top surface of a semiconductor substrate, one of said layers forming an active layer for light wave propagation under lasing conditions, said laser characterized by a channeled mesa contiguous with the top surface of said substrate, said channeled mesa comprising an elongated mesa with an elongated channel formed in the top surface of said mesa whereby during crystal growth of said semiconductor layers, said active layer and the semiconductor layers contiguous therewith over said channeled mesa are caused to grow uniformly with smooth facet like finishes and without layer surface irregularities.

4,317,086

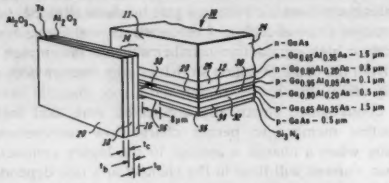
PASSIVATION AND REFLECTOR STRUCTURE FOR ELECTROLUMINESCENT DEVICES

Donald R. Scifres, Los Altos; Neville Connell, Cupertino, and William Streifer, Palo Alto, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 13, 1979, Ser. No. 75,383
Int. Cl.³ H01S *3/19*
U.S. Cl. 372—49 **4 Claims**

1. In a semiconductor electroluminescent device having a p-n junction in the device capable of emitting optical radiation when made operative by means of a current applied across said

junction, the emission of the radiation from said device being from at least one facet surface thereof and characterized by



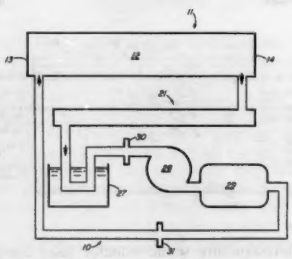
a passivation layer of organic perylene encapsulating at least said one facet surface, said perylene having high optical transparency and impervious to the ambient environment.

4,317,087

APPARATUS FOR IMPROVING THE WORKING TIME OF THE XeBr LASER

Robert K. Sander; George Balog, and Emma T. Seegmiller, all of Los Alamos, Minn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 4, 1980, Ser. No. 127,008
Int. Cl.³ H01S 3/22
U.S. Cl. 372—57 **11 Claims**



1. A XeBr laser system which comprises:
(a) a closed loop conduit through which a gaseous working medium may be repeatedly circulated;
(b) a gaseous working medium comprising initially xenon, HBr, and a desired rare gas diluent in a desired ratio contained in said closed loop conduit;
(c) means for producing coherent laser radiation in an optical gain region of said conduit;
(d) means in said conduit positioned downstream of said optical gain region for including recombination of H_2 and Br_2 into HBr; and
(e) recirculation means for continuously pumping said working medium around the fluid circuit described by said conduit.

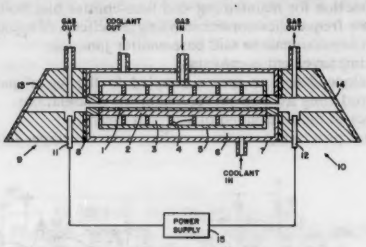
4,317,088

CAPILLARY WAVEGUIDE LASER WITH COOLED POROUS WALLS

Thomas G. Roberts, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 7, 1980, Ser. No. 138,055
Int. Cl.³ H01S 3/19
U.S. Cl. 372—92 **5 Claims**

1. In a laser having a porous wall capillary tube for flowing gas from outside the circumference of the tube into the tube and out its ends; the improvement comprising a second porous tube enclosing said capillary tube; said second tube having a



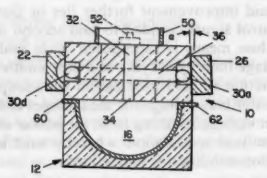
greater thermal conductivity than said capillary tube; and cooling means attached to said second tube.

4,317,089

RING LASER

David C. Grant, Jr., and Thomas J. Hutchings, both of Thousand Oaks, Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Continuation of Ser. No. 947,355, Oct. 2, 1978. This application Dec. 8, 1980, Ser. No. 214,143
Int. Cl.³ H01S 3/083
U.S. Cl. 372—94 **16 Claims**



1. A ring laser, including means forming a resonant cavity, an active gaseous medium within said cavity, a pumping source, and energy abstracting means, comprising:
a block defining said resonant cavity in a closed path containing said active gaseous medium, including at least one laser gain region within said cavity, said means forming a resonant cavity including a plurality of mirrors positioned within said gaseous medium in said cavity, a cathode and at least two anodes connected by passageways formed in said block through said gain regions of said cavity, the passageways between said cathode and said anodes including said gain regions;
at least one of said mirrors being concave, and the remaining mirrors being substantially planar;
at least one of said mirrors being tilted at a pyramid angle relative to the other said mirrors; and
at least one of said mirrors being partly transmissive.

4,317,090

LASER OSCILLATOR

Akio Nagai; Haruhiko Nagai, and Masao Hishii, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

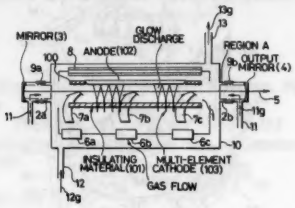
Filed Jul. 20, 1979, Ser. No. 59,858
Int. Cl.³ H01S 3/09
U.S. Cl. 372—58 **14 Claims**

1. A gas laser oscillator comprising: a laser chamber containing a first active gas medium capable of sustaining laser oscillation in a first region thereof and a second gas medium in a second region thereof, said second gas medium having substan-

tially no amplification function but having a laser beam absorption function;

means for producing an electric discharge disposed in said first region to excite said first gas medium into laser oscillation having an amplification function to thereby generate a laser beam;

a pair of mirrors provided at respective ends of said laser chamber, said mirrors constituting an optical resonator together with said first and second chamber regions;



an input port and an output port provided to and from said second region; and

means for selectively introducing said second gas medium into said second region through said input port and means for selectively removing said second gas medium from said second region through said output port to thereby reduce the laser beam absorption function in said second region.

4,317,091

NEGATIVE SEMICONDUCTOR RESISTANCE

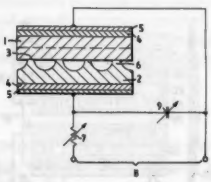
Reinhard Dahlberg, Flein, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed May 28, 1980, Ser. No. 153,938

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1979, 2926757

Int. Cl.³ H01L *45/00*

U.S. Cl. 331—107 R **12 Claims**



1. A negative semiconductor resistance in which two separate semiconductor elements are provided having the same conductivity characteristics; both semiconductor elements have at least three fixed areas of contact with a diameter of less than $1 \cdot 10^{-2}$ under mechanical pressure; and an electrical d.c. or a.c. voltage is applied to the two separate semiconductor elements and is so high that an electrical field strength greater than the breakdown field strength is formed at these areas of contact.

4,317,092

RECURSIVE LOW PASS DIGITAL FILTER

Ronald W. Potter, Saratoga, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 30, 1980, Ser. No. 164,411

Int. Cl.³ H03H *17/04, 11/12*

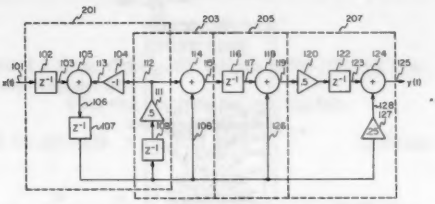
U.S. Cl. 333—165 **5 Claims**

1. An apparatus for filtering a digital input signal representative of a sequence of substantially equally-spaced samples of a signal x(t) comprising:

first combining means for providing a first signal in response to the combining of a feedback signal and said digital input signal;

feedback means coupled to said first combining means for providing said feedback signal in response to said first signal;

feedforward means coupled to said first combining means



for delaying and scaling by selected values said first signal to provide a plurality of feedforward signals; and

second combining means coupled to said feedforward means for producing a filtered digital output signal representative of a signal y(t) having an information bandwidth substantially one-half that of the signal x(t) in response to selected combinations of said feedforward signals and having a transfer function H(z) as the combination of signals from said first and second combining means, feedback means, and feedforward means, where:

$$H(z) = B\frac{(z^2 + z + 1)(z + 1)}{z^n(z^2 + 0.5)};$$

$z = e^{s\Delta t}$, which represents a time advance of Δt seconds; s is the complex variable of the LaPlace transform; B is a selected scaling; and n is a selected integer.

4,317,093

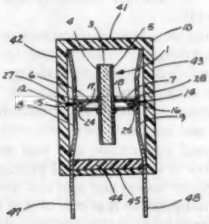
ELECTRIC FILTER AND METHOD OF MANUFACTURE

Antonio Lungo, 11941 Abbey Rd., North Royalton, Ohio 44133

Filed Mar. 1, 1979, Ser. No. 16,566

Int. Cl.³ H03H *9/58, 9/05, 9/50, 9/15*

U.S. Cl. 333—187 **37 Claims**



1. A piezoelectric resonator assembly including

support means

at least two piezoelectric resonators disposed adjacent each other and operably connected to said support means

coupling means mechanically coupling said resonators together

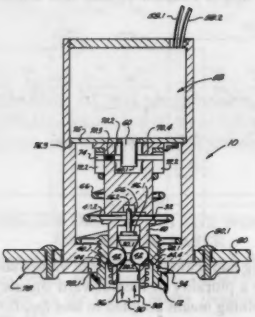
said coupling means being hollow.

4,317,094

REMOTELY CONTROLLED CIRCUIT BREAKER SYSTEM

Robert W. Peterson, North Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 21, 1980, Ser. No. 151,857
Int. Cl.³ H01H *71/10*
U.S. Cl. 335—13 **9 Claims**



1. In a system having latch means moveable in a first direction to move a member from a first position to be latched in a second position and having the member arranged in said second position to be independently moveable in said first direction for unlatching the member to return to said first position, remote control means having a plunger, the remote control means being operable from a remote location for moving the plunger, pawl means pivotedly mounted on the plunger, and means biasing the pawl means for pivotal movement, the pawl means being normally disposed so that operation of the control means to move the plunger when the member is in said first position engages the pawl means with the latch means for moving the member in said first direction to be latched in said second position and so that operation of the control means to move the plunger when the member is in said second position permits the pawl means to rotate in response to said biasing means to engage the member and move the member in said first direction for unlatching the member to return to said first position.

4,317,095

MILLI-VOLT SWITCHING DEVICE

Walter J. Jankiewicz, 3719 Mount Blackburn Ave., San Diego, Calif. 92111

Filed Apr. 7, 1980, Ser. No. 138,009
Int. Cl.³ H01H *53/015*
U.S. Cl. 335—149 **9 Claims**

4. A switching device acting responsive to initiating of current flow in a primary control circuit to close a switch in a secondary controlled circuit, comprising:

(a) magnetic means forming a magnetic field,

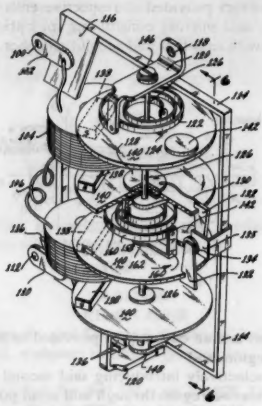
(b) said primary control circuit including coil means disposed in said magnetic field whereby a force is created between said coil means and said magnetic field when current flow is initiated in said primary control circuit,

(c) said magnetic means and said coil means being relatively pivotally mounted so that one of said means can pivotally move responsive to said force and said one means having switching means operative to close said switch upon such pivotal movement,

(d) spring means acting on said one means resisting pivotal movement of said one means to close said switch, said spring means being of a strength to be overcome by said force when current flows in said primary control circuit,

(e) said one means being said magnetic means, and

(f) a pair of vertically spaced fixed coils, a pair of pivotal mounts above and below each coil and each pair of mounts supporting a superposed pair of permanent magnets above and below each coil thereby directing a magnetic field relative to each coil, each pair of mounts being pivotal about a vertical axis, whereby when current flows through said coils said magnets will be pivoted, said coils



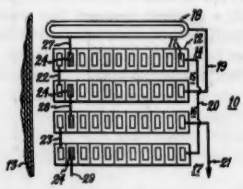
and magnets being arranged so that one pair of mounts will pivot clockwise and one pair of mounts will pivot counterclockwise in plan view under the force occasioned by initiation of current flow in said primary control circuit.

4,317,096

ELECTROSTATIC SHIELDING OF NONSEQUENTIAL DISC WINDINGS IN TRANSFORMERS

Robert C. Degeneff, Pittsfield, Mass., and John C. Crouse, Rome, Ga., assignors to General Electric Company

Division of Ser. No. 30,157, Apr. 16, 1979, Pat. No. 4,243,966.
This application Jul. 7, 1980, Ser. No. 166,524
Int. Cl.³ H01F *15/14*
U.S. Cl. 336—70 **2 Claims**



1. A disc coil winding arrangement for a transformer comprising:

a plurality of turns of insulated electrical conductors radially disposed around a winding form in a disc winding configuration;

a plurality of winding sections of said radially disposed conductors linearly arranged along said winding form;

an electrostatic ring shield adjacent one of said winding sections and electrically connected with another of said winding sections;

said winding sections being electrically interconnected in a nonsequential manner wherein a first one of said winding sections is electrically connected with a second one of said winding sections and a third one of said winding sections is electrically connected with a fourth one of said winding sections, said first and said fourth winding sections being electrically connected together, said second winding sec-

tion being electrically connected to the electrostatic ring shield and said third winding section being adapted for connection to a terminal on the transformer;

at least one electrostatic shield within said first winding section electrically connected to the electrostatic ring shield;

at least one electrostatic shield within said second winding section electrically connected with at least one electrostatic shield in said third winding section; and

an electrostatic shield in said fourth section adapted for connection with a terminal on the transformer.

4,317,097

HEAT SWITCH

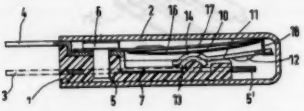
Peter Hofsäss, Strietweg 45, D-7530 Pforzheim, Fed. Rep. of Germany

Filed Apr. 30, 1980, Ser. No. 145,253

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1979, 2917557

Int. Cl.³ H01H *61/00*

U.S. Cl. 337—89 **18 Claims**



1. In a heat switch of the type having a base body, electrical connection elements fixed on the base body and insulated from each other, a movable contact member, a fixed contact member, and a bimetallic member for controlling the relative positions of said contact members with respect to each other, wherein each of the contact members is connected with a respective one of the electrical connection elements in an electrically conductive manner, and said bimetallic member is operable for conductively connecting or separating the contact members from each other, the improvement wherein the movable contact member is relatively resistant to bending and is connected by an electrically conducting articulated connection with one of said electrical connection elements, said articulated connection comprising an articulation part formed on said one of the connection elements and a movable articulation part formed on said movable contact member, said articulation parts being rotationally slidably and electrically conductively applied against each other and resiliently pressed toward each other by spring force.

4,317,098

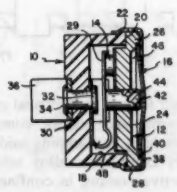
GROUNDED THERMOSTAT SWITCH

Robert Colavecchio, Johnston, R.I., assignor to Elmwood Sensors, Inc., Cranston, R.I.

Filed Jan. 28, 1980, Ser. No. 117,535

Int. Cl.³ H01H *37/74*

U.S. Cl. 337—113 **12 Claims**



1. A thermostatic switch comprising means defining a receptacle, one side of which is electrically nonconductive and the other side of which is electrically conductive, said electrically conductive side constituting a fixed contact, a movable contact supported within the receptacle from the nonconductive side thereof, and spring-biased into engagement with the fixed contact, an electrically nonconductive transmitter element extending through the electrically conductive side having an end in the receptacle in engagement with the movable contact and an end protruding from the receptacle, and a bimetallic element affixed to the receptacle in operative relation to the protruding end of the nonconductive transmitter.

4,317,099

FUSE LINK

Richard J. Sabis, Chicago, Ill., assignor to S&C Electric Company, Chicago, Ill.

Filed Mar. 24, 1980, Ser. No. 132,923

Int. Cl.³ H01H *85/02*

U.S. Cl. 337—170 **13 Claims**

1. An improved fuse link of the type having a fusible element attached between first and second terminals, the first terminal being in turn attached to a length of flexible, stranded cable; the first terminal, the fusible element, at least a portion of the second terminal, and a portion of the cable being normally surrounded by an arc-extinguishing sheath held at one end to the second terminal, wherein the improvement comprises:

a unified and thereby stiffened region of the cable having no sleeve-like or tube-like member thereabout, which region is formed immediately adjacent the first terminal and extends away a selected distance therefrom, the region normally acting substantially as a solid rod, while the remainder of the cable remains flexible.

4,317,100

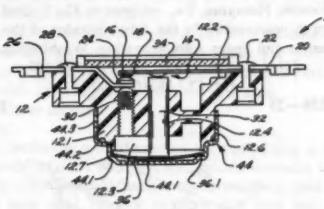
READILY MOUNTABLE THERMOSTAT

Henry J. Boulanger, Cumberland, and Philip R. Gouin, Manville, both of R.I., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 29, 1980, Ser. No. 201,939

Int. Cl.³ H01H *37/12*

U.S. Cl. 337—347 **7 Claims**



1. A thermally responsive control device having control means mounted on base means for movement between first and second control positions, having a thermally responsive thermostat metal element mounted in a control location on the base means for movement between an original dished configuration of the element and an inverted dished configuration of the element in response to selected temperature changes to move the control means between said control positions when said temperature changes occur, and having means for mounting the device with the dished element in close heat-transfer relation to an object whose temperature is to be monitored, characterized in that, the base means has boss means formed thereon, mounting bracket means of a first relatively high strength

metal material have openings formed therein and are positioned on the base means with said openings in a selected location relative to said boss means, the thermally responsive dished element is disposed in said control location on the base means, and cap means of a second relatively more formable metal material having selected thermal conductivity properties is fitted over the base means, the bracket means and the boss means and has portions thereof formed to fit into said openings in the bracket means to movably secure the thermally responsive dished element in said control location and to secure the mounting bracket means to the base means for use in mounting the device on the object whose temperature is to be monitored with the thermally responsive dished element disposed in close heat transfer relation to the object through the cap means.

4,317,101

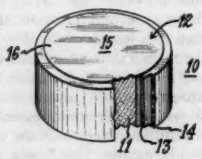
STABLE HIGH VOLTAGE DC VARISTOR

Howard F. Ellis, Stephentown, N.Y., and James S. Kresge, Pittsfield, Mass., assignors to General Electric Company

Filed Oct. 27, 1980, Ser. No. 201,182

Int. Cl.³ H01C *7/10*

U.S. Cl. 338—21 **3 Claims**



1. A zinc oxide varistor for high voltage DC operation comprising:

a sintered disc of zinc oxide varistor material;

a metal electrode on each opposing surface of said disc for providing electrical contact with said varistor material;

a glass collar around the periphery of said disc; and

an electrically insulating coating on the surface of said glass collar for preventing electrical breakdown between said opposing electrodes.

4,317,102

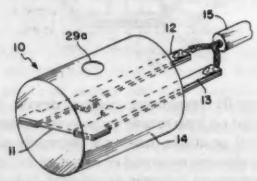
HOT FOIL TRANSDUCER SKIN FRICTION SENSOR

Thomas Vranas, Hampton, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 14, 1980, Ser. No. 178,195

Int. Cl.³ H01C *7/02*

U.S. Cl. 338—25 **10 Claims**



1. A skin friction sensor comprising:

a hot transducer for measuring temperature; and

means for supporting said hot foil transducer including:

(a) a pair of rigid conductive elements disposed one at each end of said hot foil transducer;

(b) a nonconductive body encasing all but one edge of said foil transducer; and

(c) means for connecting said conductive elements to an electrical circuit.

4,317,103

VARIABLE RESISTOR

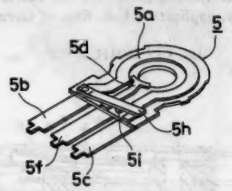
Atsushi Kawasaki, and Yukio Munakata, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jul. 19, 1979, Ser. No. 58,648

Claims priority, application Japan, Jul. 21, 1978, 53/99643[U]; Jul. 21, 1978, 53/99644[U]; Jul. 21, 1978, 53/99645[U]; Aug. 16, 1978, 53/99119; Aug. 16, 1978, 53/111478[U]

Int. Cl.³ H01C *10/30, 10/36*

U.S. Cl. 338—160 **15 Claims**



1. A variable resistor comprising a casing, a sliding member mounted in said casing and a substrate member having a resistance member in sliding contact with said sliding member, terminal members coupled to said resistance member, and bimetal strip means responsive to heat inside said casing to terminate the application of current through said variable resistor, said terminal members including terminal boards mounted on said substrate, and said bimetal strip being coupled to one of said terminal members.

4,317,104

PRECISION RESISTOR FOR MEASUREMENT PURPOSES

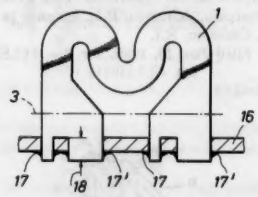
Eduard Bergmann, and Wolfgang Bonczek, both of Ludenscheid, Fed. Rep. of Germany, assignors to Firma Leopold Kostal, Ludenscheid, Fed. Rep. of Germany

Filed Nov. 7, 1979, Ser. No. 91,894

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1979, 2904197

Int. Cl.³ H01C *1/144*

U.S. Cl. 338—330 **6 Claims**



1. A precision resistor for use in electrical circuits arranged on printed circuit boards, said resistor comprising a single piece produced by punching or stamping said resistor from a flat band of thermally conductive alloy selectively surface treated with a conductive coating in confined areas on said resistor so as to improve solderability of the resistor to conductors of a circuit board, said resistor being formed at portions thereof which are to be mounted to said board with spaced feet by means of which the resistor can be soldered to the conductors of a circuit board, each of said feet being formed with two

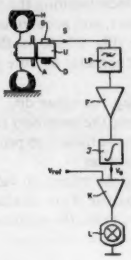
spaced toes; both surfaces of said resistor which encompass said feet being treated with said conductive coating.

4,317,105

CONDITION INDICATING DEVICE FOR WHEELED VEHICLE SHOCK ABSORBERS

Brajnandan Sinha, S-951, 47 Lulea, Sweden, and Sven-Erik Tiberg, Kaptensgatan, Sweden, assignors to Brajnandan Sinha, Lulea, Sweden

Filed Apr. 30, 1980, Ser. No. 144,971
Claims priority, application Sweden, May 2, 1979, 7903814
Int. Cl.³ G01M *17/04*; G08B *21/00*
U.S. Cl. 340—52 R **4 Claims**



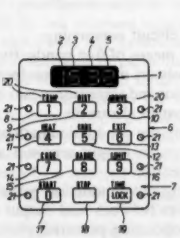
1. A device for indicating the condition of shock absorbers of wheeled vehicles by using an acceleration-sensitive means, which is rigidly attached to the vehicle near the shock absorber and emits a signal which via an electronic circuit results in an indication when a predetermined acceleration value is exceeded, characterized in that the means includes an accelerometer which is rigidly attached adjacent the wheel hub for continuously measuring the oscillations of the wheel axle, induced via a shock absorber by vertical irregularities in the road, and emitting correspondingly varying electric signals to an integrator, the output signal of which is compared in a comparator with a reference signal corresponding to a predetermined unpermissable shock absorber value, in order to, upon reaching the same, release an indication, for example lighting up an alarm lamp.

4,317,106

DIGITAL INDICATING INSTALLATION FOR MOTOR VEHICLES

Manfred Hüber, Munich, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke AG, Munich, Fed. Rep. of Germany

Filed Aug. 11, 1978, Ser. No. 932,785
Claims priority, application Fed. Rep. of Germany, Aug. 12, 1977, 2736465
Int. Cl.³ G08B *19/00*; G06F *15/20*
U.S. Cl. 340—52 F **37 Claims**



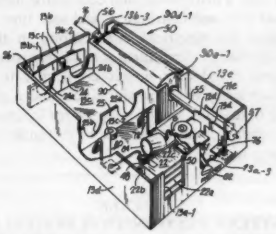
1. A digital indicating installation for vehicles having means for generating a first function value and at least one further function value and which selectively displays several function values in a single indicating field comprising display means responsive to the generating means for normally displaying the first function value in the indicating field, and at least one switch means operable during the actuation thereof to interrupt the display of the first function value for a fixed predetermined time, the display means being responsive to operation of the at least one switch means for displaying in the indicating field during the fixed predetermined time a single further function value coordinated to the at least one switch means and for automatically displaying in the indicating field the first function value after the expiration of the fixed predetermined time, and further comprising means responsive to the actuation of the at least one switch means for initiating a switching command and enabling a numerical value to be displayed in the indicating field in accordance with subsequent actuation of the at least one switch means.

4,317,107

AUDIBLE VACUUM DETECTOR

Burton C. Trattner, Coram, N.Y., assignor to Harvey-Westbury Corp., Westbury, N.Y.

Filed Oct. 30, 1979, Ser. No. 89,407
Int. Cl.³ B60Q *5/00*; G08B *21/00*
U.S. Cl. 340—52 R **18 Claims**



1. Compact, self-contained vacuum gauge apparatus, comprising:

a housing, said housing containing:

vacuum sensing means including a reciprocating member, said vacuum sensing means having a coupling for connection with a source whose vacuum condition is to be measured;

said reciprocating member having an arm projecting from said vacuum sensing means;

an electrical circuit including first and second resilient flexible contacts slidably engaging said arm and maintaining and guiding said arm for movement along said path coincident with the longitudinal axis of said arm;

audible alarm means;

a battery;

said arm including a rigid contact for completing a conductive path between said first and second contacts for electrically coupling said audible alarm means to said battery when said rigid contact engages said first and second contacts; and

an elongated flexible conduit for connection between said coupling and the source to permit monitoring of the vacuum condition at a location remote from said source.

4,317,108

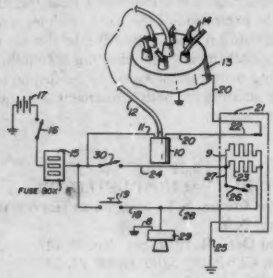
VEHICLE THEFT PREVENTION DEVICE

Jerome Schwartz, and George J. Infante, both of Philadelphia, Pa., assignors to Taylor Lock Company, Philadelphia, Pa.

Filed May 27, 1980, Ser. No. 153,410
Int. Cl.³ B60R *25/04*, *25/10*
U.S. Cl. 340—64 **2 Claims**

1. A testable theft prevention device for an internal combus-

tion engine having an auxiliary circuit, said device comprising a normally closed heat opening time delay switch for series connection in an auxiliary circuit to permit engine operation when the switch is in its unheated condition, electric heat generating switch operating means for connection in heat transfer relation with the switch to operate the latter upon heat generation on engine operation to effect theft prevention, and a selectively operable control switch connected to said operating means to enable and disable the latter, the auxiliary circuit



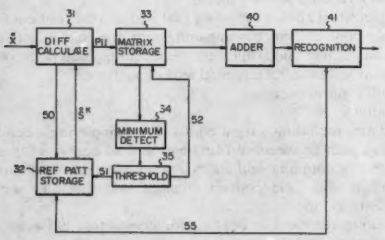
including a coil, a distributor, and conductor means connected between said coil and distributor, and said time delay switch being adapted for electrical interposition in the conductor means, the auxiliary circuit further including an audible alarm, and additional conductor means connected to said audible alarm to electrically energize the latter, and a normally open heat closing time delay switch adapted for interposition in said additional conductor means and in heat transfer relation with said operating means.

4,317,109

PATTERN RECOGNITION SYSTEM FOR HAND-WRITTEN CHARACTERS OPERATING ON AN ON-LINE REAL-TIME BASIS

Kazumi Odaka, Tokorozawa, and Isao Masuda, Higashi-Kurume, both of Japan, assignors to Nippon Telegraph & Telephone Public Corp., Tokyo, Japan

Filed Apr. 17, 1980, Ser. No. 140,448
Claims priority, application Japan, May 18, 1979, 54-61146
Int. Cl.³ G06K *9/46*
U.S. Cl. 340—146.3 AC **2 Claims**



1. A pattern recognition system for handwritten characters operating on an on-line real-time basis comprising:

(a) a character input unit for providing the coordinates of a plurality of points of an input character, the input character being formed by a plurality of strokes,

(b) a pre-process unit for normalizing the size and the position of said input character,

(c) means for providing a plurality of feature points for each stroke of the input character,

(d) a reference pattern storage for providing the coordinates of the feature points for each stroke of a plurality of reference characters,

(e) a stroke difference calculator for providing a stroke difference p_i which is the sum of the length between the feature points of the k'th stroke of the input character and the feature points of the i'th stroke of the j'th reference character, where i, j and k are integers,

(f) a storage for storing the stroke difference p_i,

(g) means for operating the members (e) and (f) repetitively by incrementing the value i for all the strokes of the j'th reference character,

(h) means for detecting the minimum value p_{min} among the stroke differences p_i thus stored,

(i) means for operating the members (e), (f), (g) and (h) repetitively for by incrementing the value k all the strokes of the input character, and accumulating the value p_{min} to provide the value $d\theta_j$, which is the pattern difference between the input character and the j'th reference character,

(j) a storage for storing the value $d\theta_j$,

(k) means for operating the members (i) and (j) repetitively for all the reference characters to provide the set of $d\theta_j$ for the given input character,

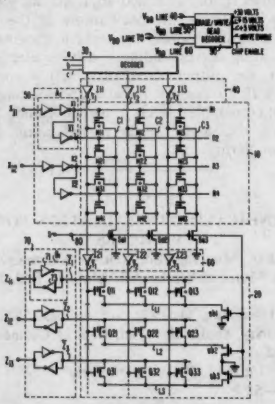
(l) means for detecting the minimum value among the values $d\theta_j$, and determining the input character as the reference character which provides the minimum value of $d\theta_j$.

4,317,110

MULTI-MODE CIRCUIT

Sheng T. Hsu, Lawrenceville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 30, 1980, Ser. No. 164,683
Int. Cl.³ H03K *11/60*; H04Q *3/00*
U.S. Cl. 340—825.91 **7 Claims**



1. A level shift circuit comprising:

a first transistor means of first conductivity type and second and third transistors of second conductivity type, each one of said transistor and transistor means having a conduction path and a control electrode;

means connecting the conduction path of said first transistor means between an output terminal and a first point of operating potential;

means connecting the conduction paths of said second and third transistors between said output terminal and a second point of operating potential;

means connecting the control electrodes of said first transistor means and said second transistor to a control terminal;

means for applying an operating potential between said first and second points of operating potential;

means for selectively applying different values of control potential to said control terminal; and

means for applying an input signal to the control electrode of said third transistor.

4,317,111

DIGITAL DEVICE FOR SYNCHRONIZING AND DECODING CODED SIGNALS

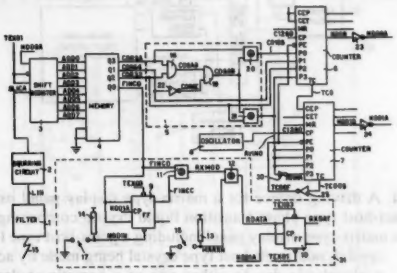
Roberto Masoero, Ivrea, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Continuation-in-part of Ser. No. 28,643, Apr. 10, 1979, abandoned. This application Jan. 19, 1981, Ser. No. 226,524

Claims priority, application Italy, Apr. 11, 1978, 67796 A/78

Int. Cl.³ H03K *13/24*

U.S. Cl. 340—347 DD **2 Claims**



1. In a communication receiving apparatus having receiving means for receiving signals from a communication line, the signals being coded in phase and having approximately a predetermined frequency, a digital device for decoding the coded signals so received comprising:

an oscillator for generating a periodic signal;

counting means connected to said oscillator for generating a basic clock signal having the predetermined frequency upon receiving predetermined plurality of the periodic signals, said counting means generating a further clock signal having a frequency which is a multiple of the predetermined frequency according to a predetermined number;

sampling means cyclically controlled by the further clock signal for repeatedly sampling the received coded signals according to the multiple frequency, said sampling means including a shift register for storing, in each sampling cycle, a number of logic levels equal to the predetermined number and forming a pattern of binary signals corresponding to the phase of the coded signals received during an interval of time between two subsequent basic clock signals;

memory means addressed by the pattern of binary signals for generating a control word representative of the pattern for indicating, in synchronism with the base clock signal, the lag or lead of the last received signal with respect to the base clock signal and for generating an additional control signal representative of particular information in accordance with the last received signal, defined according to a majority rule applied to the binary signals in comparison with a pair of opposite reference patterns, the control word selectively presetting said counting means at the end of each count to advance or delay the generation of two clock signals by a selected time, dependent on the control word, during the next following sampling cycle; and

decoding means jointly controlled by the additional signal and the basic clock signal of the next following sampling cycle for generating a decoded signal representative of the received coded signals, so the basic clock signal generated upon receiving predetermined coded signals controls both the decodification of the received coded signal and the sampling of the next following coded signal.

4,317,112

ARRANGEMENT FOR DETERMINING THE REMOVAL OF WORK TOOLS AND/OR DRIVE ELEMENTS FROM RECEIVING LOCATIONS, PARTICULARLY FOR A DENTAL TREATMENT LOCATION

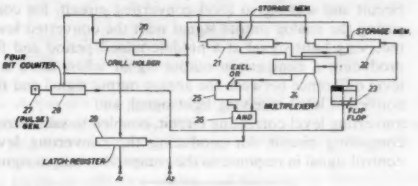
Stefan Beier, and Hermann Gmeinder, both of Biberach, Fed. Rep. of Germany, assignors to Kaltenbach & Voight GmbH & Co., Fed. Rep. of Germany

Filed Oct. 3, 1979, Ser. No. 81,400

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1978, 2844347

Int. Cl.³ G08B *21/00, 13/26*

U.S. Cl. 340—568 **4 Claims**



1. In an arrangement for detecting the removal of work tools or of drive elements utilized for driving work tools from receiving locations provided for the storage thereof in a dental treatment facility, and for delivering signals indicative of their removal, the improvement comprising: a coil associated with each receiving location, an oscillation generator connected with said coils and delivering oscillation signals, the amplitudes of which are indicative of the presence or absence of a work tool or drive element from its associated receiving location, and means for detecting the occurrence of a change in amplitude from a reference value to produce the indicator signal.

4,317,113

PHOTOELECTRIC SMOKE SENSOR

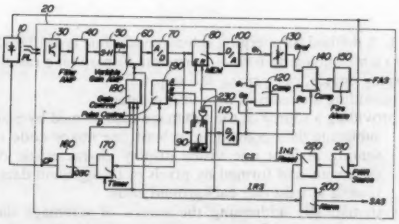
Hiroshi Honma, Hino, Japan, assignor to Hochiki Corporation, Tokyo, Japan

Filed Aug. 11, 1980, Ser. No. 177,250

Claims priority, application Japan, Aug. 24, 1979, 54/107981

Int. Cl.³ G08B *17/10*

U.S. Cl. 340—630 **8 Claims**



1. A photoelectric smoke sensor for producing a fire alarm signal in response to light generated by a light emitting device and received by a light receiving device spaced from the light emitting device, the fire alarm signal being generated when an amount of attenuation of the received light exceeds a predetermined level due to smoke flowing into the space between the light emitting device and the light receiving device, the light receiving device producing a receiving light signal, having a level, in response to the received light, said photoelectric smoke sensor comprising:

a signal level converting circuit for varying the level of the receiving light signal produced by the light receiving device in response to a converting level control signal to produce a converted level receiving light signal;

a memory circuit, coupled to said signal level converting circuit, for storing and holding in digital form an initial value of the converted level receiving light signal;

a D/A converting circuit, coupled to said memory circuit, for converting the digital form of the initial value of the converted level receiving light signal into an analog output signal;

a first comparing circuit, coupled to said D/A converting circuit and said signal level converting circuit, for comparing the analog output signal with the converted level receiving light signal to produce the fire alarm signal when there is a level difference between the analog output signal and the converted level receiving light signal;

a second comparing circuit, coupled to said D/A converting circuit and said signal level converting circuit, for comparing the analog output signal with the converted level receiving light signal at a predetermined period and for producing a comparison output signal when there is a level difference between the analog output signal and the converted level receiving light signal; and

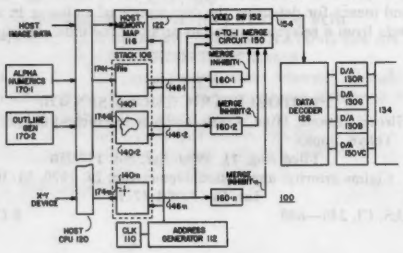
a converting level correcting circuit, coupled to said second comparing circuit, for producing the converting level control signal in response to the comparison output signal.

4,317,114

COMPOSITE DISPLAY DEVICE FOR COMBINING IMAGE DATA AND METHOD

James T. Walker, Palo Alto, Calif., assignor to Cromemco Inc., Mt. View, Calif.

Filed May 12, 1980, Ser. No. 148,964
Int. Cl.³ G09G 1/16
U.S. Cl. 340—721 **37 Claims**



1. A method for merging subimage scanline type digital data into a host image to form a composite display on a raster type display device, comprising the steps of:

providing a stream of host image data;

providing a source of the subimage data formed by pixels of subimage data containing at least one image code representing at least one visual display characteristic of the subimage, and formed by pixels of background data containing at least one background code;

systematically addressing the source of subimage data to form a stream of subimage data containing subimage pixels and background pixels;

syncronizing the stream of subimage data with the stream of host image data;

detecting the absence of background pixels in the stream of subimage data;

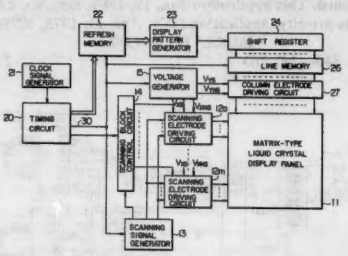
substituting subimage pixels in the stream of subimage data for the corresponding host image data in the stream of host image data in response to the absence of the background pixels in the stream of subimage data to form a composite display.

4,317,115

DRIVING DEVICE FOR MATRIX-TYPE DISPLAY PANEL USING GUEST-HOST TYPE PHASE TRANSITION LIQUID CRYSTAL

Hideaki Kawakami, Mito; Masaaki Kitajima, Hitachi; Naoyuki Izaki, Hitachi, and Yoshiharu Nagae, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 29, 1979, Ser. No. 98,666
Claims priority, application Japan, Dec. 4, 1978, 53-149153
Int. Cl.³ G09G 3/36
U.S. Cl. 340—784 **5 Claims**



1. A driving device for a matrix-type display panel using a guest-host type phase transition liquid crystal comprising:

a matrix-type display panel including a guest-host type liquid crystal, said guest-host type crystal being made by adding a pleochroic dye to either one of a nematic-cholesteric phase transition liquid crystal and a chiralnematic phase transition liquid crystal;

a scanning region selecting circuit for selecting a scanning region on a display plane of said matrix-type display panel, said selected scanning region including a predetermined number of scanning lines, and being scanned to write information therein, said scanning region selecting circuit selecting a next scanning region when the scanning operation in said selected scanning region has been completed, so that said scanning region selecting circuit divides said matrix into said scanning region in which new information can be written and at least one holding region wherein new information cannot be written;

a scanning circuit for repeatedly scanning said scanning lines of said selected scanning region in a one-line-at-a-time scanning fashion, said scanning operation being repeated a plurality of times to write and display said information in full degree;

a scanning line voltage applying circuit for applying a desired selection voltage and a non-selection voltage respectively to a selected scanning line and all other scanning lines than said selected scanning lines, in synchronism with said one-line-at-a-time scanning operation performed by said scanning circuit;

a column voltage applying circuit for applying another selection voltage and another non-selection voltage respectively to one or more column electrodes and the remaining column electrodes in synchronism with said one-line-at-a-time scanning operation performed by said scanning circuit, said one or more column electrodes corresponding to one or more selected positions on said selected scanning line, all of said column electrodes being arranged perpendicular to said scanning lines; and

a voltage generator for supplying said scanning line voltage applying circuit with said selection and non-selection voltages and for supplying said column voltage applying circuit with said another selection and non-selection voltages,

wherein said respective selection and non-selection voltages applied to said scanning region serve to provide write-in signals for writing in new information to said scanning

region, and wherein said respective selection and non-selection voltages applied to said holding region serve as holding signals to said holding region to maintain the display state of said holding region as it is.

4,317,116

ARRANGEMENT FOR THE GENERATION OF A SIGNAL IN PROPORTION TO A CAPACITY

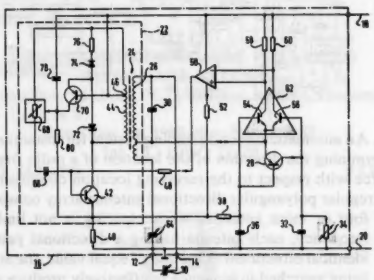
Franz Macho, Marxzell-Pfaffenrot, Fed. Rep. of Germany, assignor to VEGA Vertrieb und Fertigung Elektronischer Gerate und Apparate Grieshaber KG, Wolfach, Fed. Rep. of Germany

Filed Jan. 14, 1980, Ser. No. 111,785

Claims priority, application Fed. Rep. of Germany, Jan. 16, 1979, 2901516

Int. Cl.³ G08C *19/10*

U.S. Cl. 340—870.39 18 Claims



1. In a system for generating a measurement signal proportional to an impedance to be measured, comprising an active supplying operating current to said measuring converter and receiving said measurement signal, said measuring converter being coupled between said two-wire line and said impedance to be measured and comprising:

oscillator means for generating an alternating current signal, said oscillator means including regulating means for stabilizing said alternating current signal, and means for coupling said alternating current signal to said impedance;

control circuit means coupled between said oscillator means and said two-wire line, said control circuit means comprising switching means coupled to said oscillator means, first differential amplifier means coupled to said oscillator means for generating an output signal in accordance with the difference between the alternating current signal and a reference signal, and second differential amplifier means coupled between said first differential amplifier means and said first switching means, said second differential amplifier means being responsive to the polarity of said alternating current signal to couple said alternating current signal to said two-wire line at one polarity of said alternating current signal, said switching means being responsive to the polarity of said alternating current signal to couple said alternating current signal to a reference signal establishing circuit at the other polarity of said alternating current signal, said reference signal establishing circuit providing said reference signal and being coupled between said second differential amplifier means and said two-wire line; and

wherein the alternating current oscillator signal current is controlled by said first differential amplifier means and said regulating means and varies in accordance with said impedance, whereby said two-wire line receives a measurement signal current in accordance with the impedance measured.

4,317,117

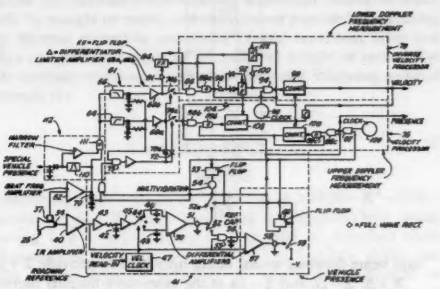
CROSS CORRELATED DOPPLER RADAR/INFRA RED VELOCITY AND PRESENCE SENSOR

Norman E. Chasek, 24 Briar Brae Rd., Stamford, Conn. 06903

Filed Jul. 20, 1979, Ser. No. 59,332

Int. Cl.³ G01S *13/86*

U.S. Cl. 343—6 ND 2 Claims



2. Apparatus for sensing the presence and velocity of an object in a region comprising,

a protective housing including a window that passes microwave and infra red radiation,

a parabolic reflector within said housing for focusing both microwave and infra red radiation arriving through said window,

a feed means located at the focus of said parabolic reflector for illuminating said reflector, said feed means including an infra red level sensing element and a coupler for a doppler radar receiver-transmitter,

a doppler radar mixer-transmitter connected to said coupler,

a plurality of low frequency amplifiers one of said amplifier being connected to said radar mixer-transmitter and the other being connected to said infra red sensing element,

a sample and hold circuit to retain voltage samples representative of IR emissions from said region when free of objects to establish a reference level,

a circuit that establishes presence by indicating whenever IR levels differ from said reference following a doppler radar indication of entry into said region and,

a circuit for measuring the doppler beat frequency when coincident with said presence indication.

4,317,118

SYMMETRICAL BEAM-FORMING NETWORK

Robert G. Corzine, China Lake, and Guenter H. Winkler, Ridgecrest, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 8, 1973, Ser. No. 411,588

Int. Cl.³ H04B *7/00*

U.S. Cl. 343—100 R 6 Claims

1. A beam forming network for forming four beams from Σ and Δ modes generated on an associated antenna comprising;

input means adapted to receive a sum (Σ) mode from an antenna;

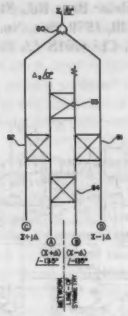
power divider means receiving the sum (Σ) mode from said input means and outputting two quantities in phase;

other input means adapted to receive a difference (Δ) mode from said antenna;

other power divider means receiving the difference (Δ) mode from said other input means and outputting to quantities 180° out of phase with respect to one another;

beam-forming means having inputs and four outputs;

said inputs of said beam forming means operatively receiving the two sum outputs and two difference outputs;



said beam-forming means being operative to provide $\Sigma+j\Delta$, $\Sigma+\Delta$, $\Sigma-\Delta$, and $\Sigma-j\Delta$ at the respective outputs thereof.

4,317,119

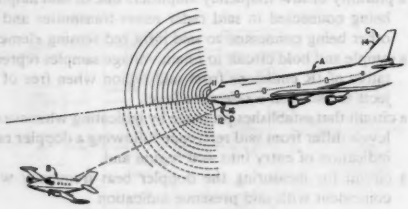
STAND ALONE COLLISION AVOIDANCE SYSTEM

Luis W. Alvarez, 131 Southampton Ave., Berkeley, Calif. 94907

Filed Dec. 12, 1979, Ser. No. 102,803

Int. Cl.³ G01S *3/38*

U.S. Cl. 343—112 CA **10 Claims**



1. In an aircraft-carried collision avoidance system for providing warning of potential collision with other craft or objects, the combination of:

(a) first radar means including a millimeter-wavelength transmitter carried by an aircraft for transmitting, forwardly of said aircraft, a train of time-spaced radiation pulses;

(b) second radar means including a millimeter-wavelength receiver including a receive-only phased array antenna;

one of said radar means having a first left-right mechanically scanned antenna with a substantially vertically oriented beam having a horizontal-plane beam width of the order of one degree and a relatively very large vertical beam width;

the other of said radar means having a second synchronized left-right mechanically scanned antenna and having an antenna pattern beam width of about one degree in the horizontal plane and a much narrower beam in the vertical plane and with said pattern being electronically scannable through a vertical angle whereby the pencil beam formed by the overlap of the receiver and transmitter pattern scan a segment of the forward direction of said aircraft;

(c) means for using said output signals to evaluate the threat of potential collision.

4,317,120

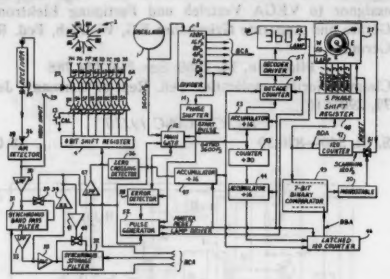
SECTOR SCAN ADF SYSTEM

W. Ferrel Bentley, Smyrna; Arthur Luedtke, Marietta, and James E. Scott, Austell, all of Ga., assignors to The United States of America as represented by the Field Operations Bureau of the Federal Communications Commission, Washington, D.C.

Filed Sep. 24, 1979, Ser. No. 78,270

Int. Cl.³ G01S *3/54*

U.S. Cl. 343—120 **7 Claims**



1. An automatic direction finding system for instantaneously determining the direction of the location of a radio frequency source with respect to the receiving location comprising:

a regular polyangular directional antenna array consisting of four or more antennas whose spacing is not limited by frequency, each antenna having a directional pattern of identical directional shape and of equal value, the antennas being switched in sequence to effectively produce a rotating pattern; a switcher means which combines the separate antenna signals onto a common signal port on which is superimposed an AM modulation related to the direction of the signal source; a receiver means which processes the common RF signal and feeds the resultant signal to a detector means; the entire system being synchronized by a controlling means which coordinates the actions of a driver means, a filter means, an accumulation means, and a display means; said driver means creating switching voltages which control said switcher means, the output of said detector means being followed by said filter means which can then integrate and store the bearing information, said accumulation means averaging bearing information from said filter means which output is then fed to said bearing display means, error detecting to minimize erroneous bearings being built into said bearing display means as well as a bearing status indicating means to display the current status of the indicated bearing.

4,317,121

CONFORMAL HF LOOP ANTENNA

William P. Allen, Jr., and Benjamin S. Zieg, both of Atlanta, Ga., assignors to Lockheed Corporation, Burbank, Calif.

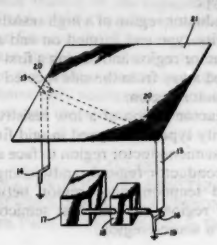
Filed Feb. 15, 1980, Ser. No. 121,749

Int. Cl.³ H01Q *11/32*

U.S. Cl. 343—712 **5 Claims**

1. A conformal HF two-way radio loop antenna comprising an inverted generally U-shaped, continuous, single, radiating metal strip connected at one end to ground and at its other end to a grounded impedance matching device, said metal strip being one of low loss/low resistance material with dimensions such as to make it compatible with the characteristics of said

impedance matching device and secured to a non-conductive, relatively rigid material on top of a metal frame vehicle body,



said strip being secured to said rigid material through a conducting plate.

4,317,122

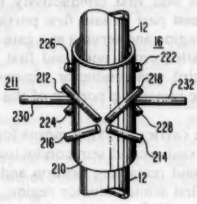
DUOPYRAMID CIRCULARLY POLARIZED BROADCAST ANTENNA

Oded Ben-Dov, Medford, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 18, 1980, Ser. No. 179,155

Int. Cl.³ H01Q *21/26*

U.S. Cl. 343—798 **9 Claims**



1. A circularly or elliptically polarized antenna including a conductive support mast, comprising:

first and second crossed dipoles disposed on opposite sides of the mast, the dipole elements being displaced by about 45° from first and second vertical planes parallel with the axis of said mast for radiating a CP field whereby currents are induced in said mast which perturb the vertical component of the radiated field;

a conductive sleeve fitted about said mast in the region of said first and second crossed dipoles for forming a choke for reducing current flow in said mast, whereby currents induced in said sleeve contribute a vertically polarized component to said radiated field which increases the axial ratio; and

a polarizer element coupled to said sleeve and oriented perpendicular to said mast for producing as a result of induced currents a horizontally polarized field which reduces the axial ratio.

4,317,123

THERMAL RECORDING MATERIAL

Tomizo Namiki; Osamu Seshimoto; Fumiaki Shinozaki; Akira Nahara, and Tomoaki Ikeda, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Oct. 25, 1979, Ser. No. 88,233

Claims priority, application Japan, Oct. 25, 1978, 53/131927

Int. Cl.³ G01D *15/34, 15/10;* B32B *15/08*

U.S. Cl. 346—135.1 **15 Claims**

1. A thermal recording material having increased recording sensitivity to thermal radiation which comprises a support having thereon in sequence a subbing layer and a recording layer comprising metal having high optical density which undergoes thermal deformation under the action of high intensity radiation to result in a difference in optical density between irradiated areas and non-irradiated areas, said subbing layer containing a composition which comprises (A) 100 parts by weight of chlorinated polyolefin selected from the group consisting of chlorinated polyethylene, chlorinated polypropylene or a mixture thereof having a chlorine content of about 30% by weight or more, said chlorinated polyolefin increasing the thermal recording sensitivity of said recording layer and (B) a one part by weight to 100 parts by weight of aminoalkyl alkoxysilane compound represented by the following general formula (I):

$$R^1—R^2—\underset{\underset{R_p^4}{|}}{Si}—(OR^3)_m \qquad (I)$$

wherein R^1 represents an amino group or a $H_2N—R^5—NH—$ group; R^2 and R^5 each represents a polymethylene group having 1 to 2 carbon atoms or a straight or branched chain alkanediyl or alkylene group having 3 to 5 carbon atoms, and may be the same or different; R^3 represents a straight or branched chain alkyl group having 1 to 5 carbon atoms; m represents 2 to 3; R^4 represents a straight or branched chain alkyl group having 1 to 5 carbon atoms or a $R^1—R^2—$ group; and p represents 0 or 1, provided $m+p=3$.

4,317,124

INK JET RECORDING APPARATUS

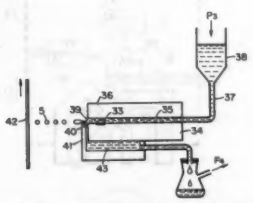
Yoshiaki Shirato, Yokohama; Yasushi Takatori, Sagamihara; Toshitami Hara, Tokyo; Yukuo Nishimura, Sagamihara, and Michiko Takahashi, Ohizumi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 1, 1980, Ser. No. 117,487

Claims priority, application Japan, Feb. 14, 1979, 54-15706; Feb. 16, 1979, 54-16953; Feb. 19, 1979, 54-18797; Feb. 19, 1979, 54-18798

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—140 R **16 Claims**



1. An ink jet recording apparatus for ejecting a recording liquid in the form of droplets from an orifice communicating with a chamber containing said liquid and depositing at least a part of said droplets onto a recording material to perform recording, comprising liquid intake means outside said orifice and adjacent said orifice to take in the liquid which does not become droplets.

4,317,125

FIELD EFFECT DEVICES AND THEIR FABRICATION

Brian T. Hughes, Sandy; John C. Vokes, Harpenden, and David R. Wight, Hitchin, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed May 31, 1979, Ser. No. 43,979

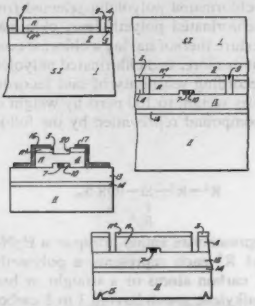
Claims priority, application United Kingdom, May 31, 1978, 25552/78

Int. Cl.³ H01L *21/302*

U.S. Cl. 357—15 **33 Claims**

1. A method of fabricating a field effect transistor compris-

ing the steps of forming an active layer of semiconductor material over a surface of a first substrate of semiconductor material, forming a gate electrode on the surface of the active layer, applying a second substrate of insulating material to the



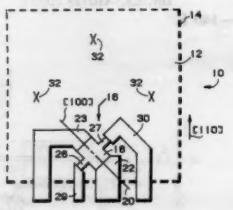
surface of the structure comprising the first substrate and active layer so that the active layer lies between the two substrates, removing the first substrate, and forming source and drain electrodes over the opposite surface of the active layer to the gate electrode.

4,317,126

SILICON PRESSURE SENSOR

John E. Gragg, Jr., Paradise Valley, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 14, 1980, Ser. No. 140,289
Int. Cl.³ H01L *29/84*
U.S. Cl. 357—26 **17 Claims**



12. A silicon pressure sensor comprising: a monocrystalline silicon diaphragm of first conductivity type having a square shape, said diaphragm having a (100) surface orientation and having sides oriented in [110] crystalline directions; a resistor of opposite conductivity type diffused into said diaphragm having current contact areas at the ends thereof, a line between said current contact areas forming a current axis, and first and second voltage contact areas positioned at opposite sides of said resistor.

4,317,127

STATIC INDUCTION TRANSISTOR AND INTEGRATED CIRCUIT UTILIZING SAME

Jun-ichi Nishizawa, Sendai, Japan, assignor to Zaidan Hojin Handotai Kenkyu Shinkokai, Sendai, Japan

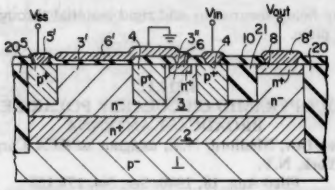
Filed Sep. 17, 1979, Ser. No. 76,439
Claims priority, application Japan, Sep. 28, 1978, 53-120122
Int. Cl.³ H01L *27/04*; H03K *19/091*
U.S. Cl. 357—42 **24 Claims**

1. A static induction type semiconductor integrated circuit device containing at least a static induction transistor including a source, a channel, a gate and a drain region, and a field effect transistor, the static induction transistor comprising:

a first semiconductor region of a low resistivity having a first conductivity type;

a second semiconductor region of a high resistivity having said first conductivity type and formed on and adjacent to said first semiconductor region and having a first main surface on that side located away from the side located adjacent to said first semiconductor region;

a third semiconductor region of a low resistivity having said first conductivity type and formed in said first main surface of said second semiconductor region to face a first portion of said first semiconductor region, sandwiching a first portion of said second semiconductor region between this third semiconductor region and said first semiconductor region and serving as a source region;



a fourth semiconductor region having a second conductivity type opposite to said first conductivity type and formed adjacent to at least part to said first portion of the second semiconductor region and serving as a gate region and defining a current path formed with said first portion between said first and third semiconductor regions and effectively isolated from the remaining portion of the second semiconductor region;

at least one charge carrier deriving means formed in said first main surface of said second semiconductor region in a second portion of said remaining portion and facing a second portion of said first semiconductor region; and

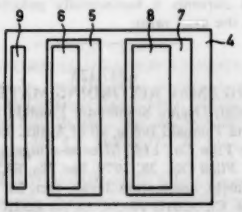
means for isolating said first semiconductor region excepting the area exposed to said second semiconductor region, and said field effect transistor having a drain semiconductor region which is merged in said gate region of said static induction transistor.

4,317,128

TWO TRANSISTOR SWITCH

Else C. Dijkmans, and Rudy J. van de Plassche, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 31, 1980, Ser. No. 135,943
Claims priority, application Netherlands, Apr. 4, 1979, 7902632
Int. Cl.³ H01L *27/06*
U.S. Cl. 357—46 **2 Claims**



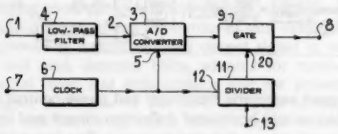
1. A transistor switch comprising a first transistor whose collector-emitter current path comprises the switching path and a second transistor, whose emitter electrode is connected

to the base electrode of the first transistor and whose base electrode comprises a switching input, characterized in that the total capacitance between the base and the emitter of the second transistor relative to the capacitance at the base electrode of the first transistor is selected such that in the conductive state of the first and the second transistors a voltage variation on the base electrode of the second transistor relative to the voltage on the emitter electrode of the first transistor is distributed substantially uniformly over the base-emitter junctions of the first and the second transistors.

4,317,129
APPARATUS FOR THE DIGITIZATION OF VIDEOFREQUENCY TELEVISION SIGNALS

Michel Favreau, Paris, France, assignor to Thomson CSF, Paris, France

Filed Jul. 3, 1980, Ser. No. 165,660
Claims priority, application France, Jul. 4, 1979, 79 17357
Int. Cl.³ H04N 7/00
U.S. Cl. 358—13 **6 Claims**



1. An apparatus for the digitization of a video frequency signal comprising:

on transmission, at least one coder comprising a first low pass filter having a cut-off frequency F_1; an analog-digital sampling converter having an input coupled to the output of said first low pass filter, a control input, and an output; a clock of frequency at least equal to $2F_1$ having an output coupled to said control input; and an output circuit having an input coupled to the output of said analog-digital converter and output delivering staggered sampled data having a rhythm F_E;

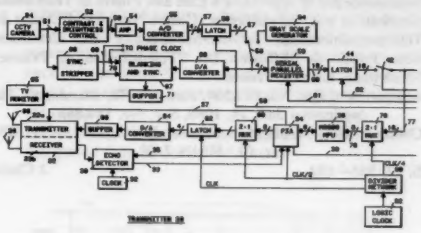
on reception, at least one decoder having an input and an output and comprising: a first digital-analog converter having an input coupled to the input of said decoder and an output; a second low pass filter of cut-off frequency F_2 slightly below $F_E/2$, having an input coupled to the output of said second low pass filter and an output; a mixer having a first input coupled to the output of said second low pass filter, a second input, and an output which is the output of said decoder; said decoder further comprising a circuit for restoring the upper part of the spectrum of the video frequency signal comprising: a circuit, having an input coupled to the input of the decoder, for combining the staggered sampled data, hving an output for delivering orthogonal sampled data at rhythm $2F_E$; a second digital analog converter having an input coupled to the output of said circuit and an output coupled to said second input of said mixer through a band pass filter having a low cut-off frequency equal to F_2 and a high cut-off frequency at least equal to F_1.

4,317,130
NARROW BAND TELEVISION TRANSMISSION SYSTEM

Daniel P. Brown, Elmhurst, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 10, 1979, Ser. No. 83,431
Int. Cl.³ H04N 7/18
U.S. Cl. 358—108 **12 Claims**

1. A television transmission system for asynchronously transmitting a television picture as a plurality of video signals over a narrow bandwidth medium from a transmitter at a remote transmitting site to a receiver at a receiving or base site, said transmitter comprising means to generate and transmit a dotting pattern consisting of alternating logic ones and zeros to precede said video signals, and said receiver comprising a

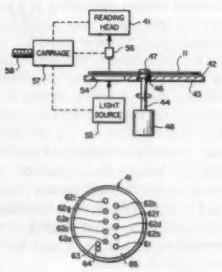


sampling clock to generate a video sampling signal and means to first synchronize said sampling clock to said dotting pattern to more accurately sample the subsequent video signals.

4,317,131
SYSTEM AND METHOD FOR REPRODUCING PICTURES AND RELATED AUDIO INFORMATION

Jonathan A. Jerome, Palo Alto, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Sep. 10, 1979, Ser. No. 73,939
Int. Cl.³ H04N 5/76
U.S. Cl. 358—128.5 **16 Claims**

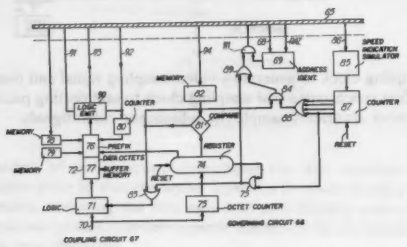


1. In a method for the storage and retrieval of video and audio information, the steps of: recording video information for discrete frames of a television picture in spaced apart tracks on a record medium, recording extended audio information for each frame in a plurality of individually transcribable tracks between the video tracks, the audio tracks for each frame being spaced from each other and from the video track for the frame in a predetermined pattern which is similar for all of the frames, simultaneously reading the information from the video track and all of the audio tracks for one frame of the picture with a single sensing head having a plurality of sensing elements arranged in accordance with the predetermined pattern for simultaneously scanning the respective tracks for the frame, and sequentially processing the information from successive ones of the audio tracks to reproduce the extended audio information during reproduction of the picture.

4,317,132
SYSTEM FOR THE DIFFUSION OF DATA

Yves M. Guinet, Rennes, France, assignor to L'Etat Francais, Represente par le Secretaire d'Etat aux Postes et Telecommunications et a la Telediffusion (Centre National d'Etudes des Telecommunication), Issy-les-Moulineaux and Etablissement Public de Diffusion Dit "Telediffusion de France", Montrouge, both of, France

Continuation of Ser. No. 911,354, Jun. 1, 1978, abandoned. This application Jan. 24, 1980, Ser. No. 114,863
Claims priority, application France, Jun. 3, 1977, 77 17625
Int. Cl.³ H04N *7/08*
U.S. Cl. 358—142 **2 Claims**



1. A system for broadcasting sets of digital data through a television broadcasting network having transmission standards which are set by a regulatory agency, the system comprising a plurality of sources of said digital data; each set of said digital data comprising a prefix, synchronism signals which are conventional for the TV network used to broadcast the digital data, an identification signal of the pertinent source of said data, and a size signal identifying the length of the data signal which follows the prefix, memory means and a coupling means individually associated with each source of data for transferring data from the associated source to said memory means, means governing said coupling means for assembling data from said source, counter means operating at a predetermined clock rate for selectively inhibiting said coupling means responsive to either a predetermined count fixed by said size signal or a full count fixed by the capacity of said counter means, data bus means, means responsive to said inhibition by said counter means for enabling said memory means to transfer its stored data to said data bus means, said data bus means combining said assembled data, first register means for controlling data introduced into said memory means, said register means having a maximum capacity which is a function of the transmission standards of said network, and means responsive to said first register means for controlling said inhibition by said counter means, whereby said data-broadcasting system is coordinated with the transmission standards of said network by the capacity of said first register means.

4,317,133
TWO-LOOP HORIZONTAL AFPC SYSTEM

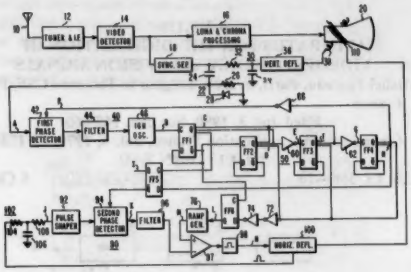
Ronald E. Fernsler, and Donald H. Willis, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Sep. 29, 1980, Ser. No. 192,332
Int. Cl.³ H04N *5/04*
U.S. Cl. 358—158 **7 Claims**

2. In a television receiver, including a source of composite video signals; means responsive to said composite video signals for separating horizontal synchronizing signals from said composite video signals; and a horizontal deflection circuit for producing horizontal flyback pulses and horizontal deflection waveforms for displaying an image on a kinescope; a horizontal automatic frequency and phase control system comprising:

a first automatic frequency and phase control loop including a first phase detector having a first input coupled to receive said horizontal synchronizing signals and a second input, and means coupled to said first phase detector for producing a substantially horizontal rate signal which is in substantial phase and frequency synchronism with said horizontal synchronizing signals, said horizontal rate signal being applied to said second input of said first phase detector;

means having an input coupled to receive said substantially horizontal rate signal and an output for producing a delayed replica of said substantially horizontal rate signal; and

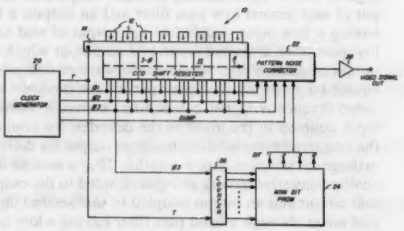


a second automatic frequency and phase control loop coupled to said horizontal deflection circuit and including a second phase detector having a first input coupled to receive said delayed replica of said substantially horizontal rate signal and a second input coupled to receive said flyback pulses for producing timed deflection drive signals for said horizontal deflection circuit which center said image on said kinescope.

4,317,134
METHOD AND APPARATUS FOR PATTERN NOISE CORRECTION

Nea-Yea Woo, Penfield, and Teh-Hsuang Lee, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 12, 1980, Ser. No. 149,088
Int. Cl.³ H04N *3/14, 5/30*
U.S. Cl. 358—213 **11 Claims**



1. A method for correcting fixed pattern noise of the type manifested as percentage variations in apparent sensitivity from element to element in solid state image sensing array, said method comprising the steps of:

measuring the size of the charge packets produced by the elements in the array under the influence of a non-imagewise input of light;

determining the percentage correction required to make the other charge packets substantially equal in size to a reference charge packet size;

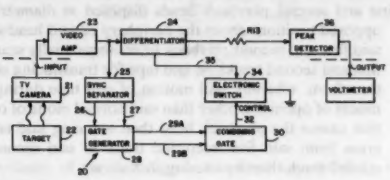
storing the percentage corrections;

during subsequent normal operation, directly removing proportional parts of the charge packets produced by the elements according to the stored percentage corrections.

4,317,135
FOCUS DETECTION CIRCUITRY

Michael C. Pitruzzello, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 2, 1980, Ser. No. 183,608
Int. Cl.³ H04N 5/14
U.S. Cl. 358—227 8 Claims

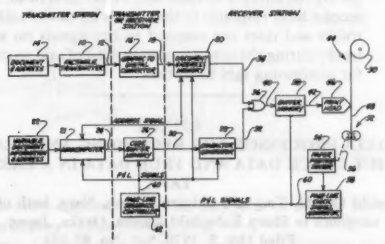


1. A focus meter comprising a video amplifier, a differentiator, a peak detector, and switching means, said video amplifier being adapted for receiving a video frequency input signal and providing an output in response thereto, said differentiator being adapted for receiving the output of said video amplifier and for providing a differentiated output signal in response thereto, said peak detector being adapted for receiving an output signal from said differentiator and for providing an output signal indicative of the level of focus of said input signal, and said switching means being coupled between said differentiator and a system ground for selectively short-circuiting unwanted interference signals to ground and thereby allowing only acceptable video pulses to be passed to said peak detector.

4,317,136
FACSIMILE SYSTEM

F. Gene Keyt, Trumbull, and Donald J. Illk, Stamford, bo'h of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Sep. 12, 1979, Ser. No. 74,699
Int. Cl.³ H04N 1/32
U.S. Cl. 358—256 8 Claims



1. In a facsimile communication system, the combination comprising:

a. means for transmitting a facsimile information signal, said facsimile information signal including information corresponding to at least one document format, each of said at least one formats having a different address;

b. means for receiving the facsimile information signal including means for storing the information corresponding to said at least one document format in digital data form, the facsimile information receiving means including means for reading out stored digital data;

c. means for transmitting alpha-numeric data signals, said alpha-numeric data transmitting means including means for receiving and storing alpha-numeric data signals from at least one source thereof, said alpha-numeric data transmitting means including means for respectively identifying each of a plurality of unique portions of the alpha-numeric data signals with an address corresponding to a selected document format address;

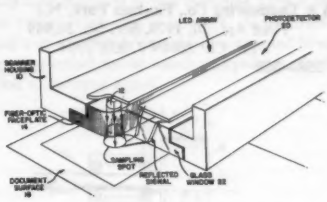
d. means for receiving the alpha-numeric data signals, said alpha-numeric data receiving means including means for converting alpha-numeric data to facsimile data in digital form, said alpha-numeric data receiving means including means for respectively integrating the converted data of each of the identified portions of data with the stored digital data of the correspondingly addressed document format; and

e. means coupled to the integrating means for printing the integrated data in document form.

4,317,137
OPTICAL SCAN HEAD AND PRINTER

Elliot N. Tompkins, Melbourne Beach, Fla., assignor to Harris Corporation, Cleveland, Ohio

Filed May 17, 1978, Ser. No. 906,773
Int. Cl.³ H04N 1/028, 1/036
U.S. Cl. 358—286 32 Claims



1. A scan head assembly for optically operating on a surface comprising:

an array of light-emitting elements disposed to illuminate an area of said surface;

means for sequentially energizing each of said light emitting elements to emit light and thereby illuminate successively adjacent regions of the area of said surface;

fiber optic faceplate means for conducting the light emitted from said light emitting elements to the successively adjacent regions of said area of said surface; and

a single photodetector means, disposed adjacent to said array of light-emitting elements, for detecting light that has been emitted by said light-emitting elements and reflected from said surface and for generating an electrical output signal representative of the amount of light reflected from the successively illuminated regions of the area of said surface.

4,317,138
METHOD AND APPARATUS FOR FACSIMILE SHEET HANDLING

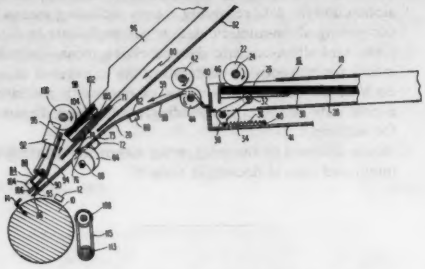
T. James Bryan, Altamonte Springs; George W. Hartman, Longwood, and Arthur G. Wilson, Maitland, all of Fla., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Feb. 11, 1980, Ser. No. 120,317
Int. Cl.³ H04N 1/08
U.S. Cl. 358—291 15 Claims

1. Facsimile apparatus comprising scanning means adapted to scan a sheet and improved sheet transport means comprising:

a transport path for feeding sheets to said scanning means;

feed means in said transport path for moving said sheets along said path to said scanning means; and



means including sensor means in said transport path for determining the length of said sheets.

4,317,139

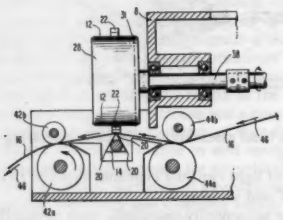
FACSIMILE APPARATUS AND METHOD OF OPERATION

Richard L. Nelson, New York, N.Y., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Apr. 20, 1979, Ser. No. 31,949

Int. Cl.³ H04N *1/032, 1/14*

U.S. Cl. 358—300 **14 Claims**



1. A facsimile apparatus for producing a copy at one location of a document at another location comprising:

means for advancing a copy medium in a first direction;

stylus means located on one side of the copy medium;

means for advancing the stylus means in a second direction;

platen means extending in said second direction on the other side of said copy medium, said platen means being triangular in cross-section and having a plurality of edges, said platen means being stationary during the advancement of said stylus in said direction so as to form a pinch spot between one of said edges and said stylus, said platen means being rotatable after said advancement so as to individually and selectively locate each of said edges adjacent said stylus.

4,317,140

STOP AND VARIABLE-SPEED MOTION ON SEGMENTED-SCAN TAPE RECORDING

Henry R. Warren, Belle Mead, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 19, 1979, Ser. No. 86,401

Claims priority, application United Kingdom, Aug. 3, 1979, 27116/79

Int. Cl.³ H04N *5/78*

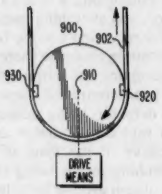
U.S. Cl. 360—10 **1 Claim**

1. An improved arrangement adapted for transducing signals from a tape helically recorded within first and second tracks alternately impressed with information from the upper and lower parts of a raster, the first tracks being recorded at a first azimuth angle and the second tracks being recorded at a second azimuth angle, the arrangement comprising:

a headwheel about which said magnetic tape moves along a helical path during said normal and variable-speed modes of operation, said tape being wrapped substantially 180 degrees about said headwheel;

drive means coupled to said headwheel for driving said headwheel one complete revolution per field; and

first and second playback heads disposed at diametrically opposed positions about the periphery of said headwheel, said first and second playback heads sequentially scanning first and second tracks on said tape for transducing signals therefrom, whereby said motion of said tape during said modes of operation other than said normal mode of operation causes the playback head then scanning said tape to cross from said first recorded track to said second recorded track thereby causing distortion;



wherein the improvement lies in that said first and second heads each have a gap width exceeding the width of said first and second tracks, respectively, whereby said first and second gaps overlie at least a portion of said first and second tracks, respectively, during the entirety of each scan; and

said first and second playback head gaps each have an azimuth angle corresponding to those at which said first and second tracks were recorded, respectively, whereby said first head responds to the signals on one of said first tracks and does not respond to the signals on said second tracks during the entirety of each scan of said first head, and said second head responds to the signals on one of said second tracks and does not respond to the signals on said first tracks during the entirety of each scan of said second head for eliminating said distortion.

4,317,141

DATA PROCESSOR FOR RECORDING AND READING OUT CHECK DATA AND TRUE DATA IN A CASSETTE TAPE

Soichi Onishi, Yao, and Shigeru Kitano, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 5, 1979, Ser. No. 82,333

Claims priority, application Japan, Oct. 11, 1978, 53-125308; Oct. 11, 1978, 53-139741

Int. Cl.³ G11B *15/04, 15/45*

U.S. Cl. 360—60 **7 Claims**

1. A data recorder for recording data in the form of signals into a cassette tape, comprising:

first means for recording first signals in a first section of the cassette tape and for determining the amplitude of a sound volume of the first signals, said first means including,

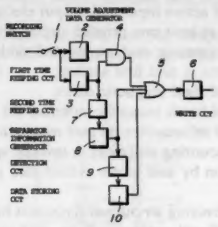
a first signal generator for generating the first signals,

a time keeping circuit coupled to the signal generator for counting a predetermined time passage when the first signals are generated, and

a write-in circuit responsive to the first signal generator and the time keeping circuit for recording the first signals onto the cassette tape; and

second means responsive to the determination of the amplitude of a sound volume of the first signals made via said

first means for recording second signals in a second section of the cassette tape when the amplitude of the sound



volume of the first signals has been appropriately controlled.

4,317,142

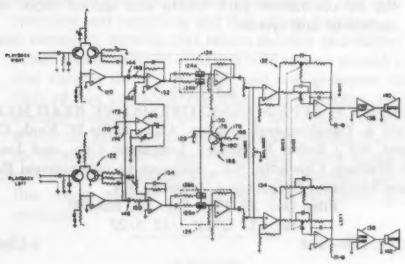
ELECTRONIC GAIN AND NOISE CONTROL FOR RECORDING OF ANALOG INFORMATION

William R. Wray, Sudbury, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 32,942, Apr. 24, 1979. This application Oct. 27, 1980, Ser. No. 201,029

Int. Cl.³ G11B *5/02*

U.S. Cl. 360—67 **2 Claims**



1. Recorder apparatus for the playback of analog signals from recording medium comprising:

dynamic expander means for expanding the dynamic range of a playback signal, said expandor means comprising an operational amplifier, a variable gain element connected to receive the analog signal to be played back and to transmit the analog signal to be played back to an input terminal of said operational amplifier, and a rectifier element connected to receive the same analog signal received by said variable gain element,

a capacitor operatively connected with respect to the rectifier element for averaging the current rectified by said rectifier element, said variable gain element and said rectifier element being connected with respect to each other so that the average value of said rectified current controls the gain of said variable gain element, and

means connected in parallel relation with respect to said capacitor for selectively clamping the voltage across said capacitor to a selective level responsive to a further applied control signal for muting said playback volume.

4,317,143

TAPE RECORDER

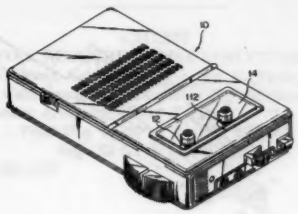
Akira Osanai, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 16, 1979, Ser. No. 94,793

Claims priority, application Japan, Nov. 16, 1978, 53-141617

Int. Cl.³ G11B *15/18, 19/06*

U.S. Cl. 360—74.1 **7 Claims**



1. A tape recorder having a reel shaft comprising pulse generating means for generating an electric or magnetic continuous pulse during rotation of said reel shaft; and

an end-of-tape detection circuit including a timer and a tape count circuit including a counter, decoder/driver and display unit and being operatively connected to said pulse generating means and to which said pulse is adapted to be applied as an input signal.

4,317,144

AZIMUTH CORRECTION OF HEAD GAPS

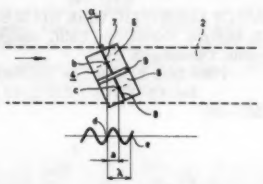
Edmond De Niet, and Albert M. A. Rijckaert, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 23, 1979, Ser. No. 41,673

Claims priority, application Netherlands, May 29, 1978, 7805803

Int. Cl.³ G11B *5/43*

U.S. Cl. 360—76 **17 Claims**



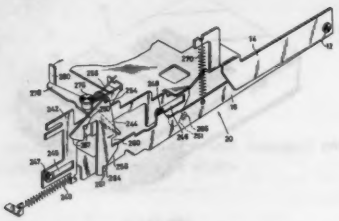
1. A method of adjusting and maintaining the correct angular position of a gap of a reproducing head relative to a signal on a magnetic record carrier which comprises: measuring the phase difference between two scanned signals of identical appearance and a control signal being derived therefrom for correcting the angular position of said gap, after obtaining the scanned signals by separately scanning the upper half and the lower half of axial portions of a single information track and measuring the time difference between every two associated zero passages of the scanned signals.

4,317,145

CASSETTE TAPE RECORDER WITH AN ENGAGEMENT MECHANISM FOR LOCKING A MOVABLE CHASSIS

Akira Osanai, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 16, 1979, Ser. No. 94,917
Claims priority, application Japan, Nov. 16, 1978, 53-141617
Int. Cl.[3] G11B *15/24*
U.S. Cl. 360—96.6 8 Claims



1. A cassette tape recorder which comprises:

a movable chassis which carries a reel capstan shaft and other members, is rotatably fitted to a fixed chassis and, upon the insertion of a cassette into the tape recorder said movable chassis is rotated from a lower position to an upper position;

urging means stretched betwen the fixed and movable chassis and adapted to urge the movable chassis from the lower position to the upper position;

engagement mechanism for the movable chassis which includes an engagement cam rotatably fitted to the fixed chassis and engageable with the movable chassis in the lower and upper positions, and an engagement lever which is reciprocally fitted to the fixed chassis, and, when moved inwardly relative to the fixed chassis, rotates the movable chassis to the lower position against the force of the urging means, thereby accumulating an urging force;

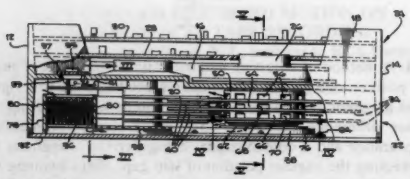
a release lever which is rotatably fitted to the fixed chassis, and is adapted to rotate in one direction upon insertion of a the cassette into the tape recorder by pressing against the engagement cam of the engagement mechanism for rotation of the engagement cam, thereby disengaging the engagement cam from the movable chassis, and, when the engagement lever of the engagement mechanism is pressed inwardly relative to the fixed chassis, said release lever is rotated in the other direction by the engagement cam for the ejection of the cassette.

4,317,146

COMPACT MAGNETIC DISK STORAGE SYSTEM

William J. Gervais, Northridge, Calif., assignor to Micropolis Corporation, Chatsworth, Calif.

Filed Dec. 3, 1979, Ser. No. 99,607
Int. Cl.[3] G11B *5/012, 5/82*
U.S. Cl. 360—98 16 Claims



1. A compact, high capacity, rigid magnetic disk digital storage system comprising:

a deck formed principally of a single casting, having first section and a second clean zone section separated by a central cast web or partition;

a disk drive motor;

a plurality of active input and output electronic components including at least one printed circuit board;

means for mounting said motor and said active electronic components in said first section;

a plurality of rigid magnetic disks;

a plurality of heads movably mounted for reading and writing digital information on said magnetic disks;

means for mounting said disks in stacked spaced relationship for rotation by said motor within said second clean zone section;

means for directing air outwardly across both of the surfaces of each of said magnetic disks, said air directing means including centrifugal pumping means mounted directly radially inwardly from said disks, said air directing and said pumping means including a central hub having a plurality of spaced peripheral slots, open at the end of said hub facing away from said motor, and a plurality of annular spacer rings mounted between said disks and around said hub, said annular spacer rings also being provided with radially extending openings aligned with the slots in said hub to draw air from the end of said hub down through said slots and out across the surfaces of said disks as a result of the centrifugal pumping action of said rotating spacer rings and disks; and

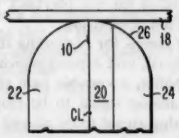
filter assembly means including a housing defining an ultra-clean low pressure zone, said housing extending over and closely fitting around the openings at the end of said hub, and said housing being of relatively shallow extent in the direction extending along the axis of said hub and said disks, and broad area filtering material defining the other limit of said low pressure ultra-clean zone, said filtering material being mounted in an enlarged portion of said filter housing spaced to one side of said disks, to complete the air circulation path within said second clean zone section of said system.

4,317,147

SANDWICH TYPE MAGNETORESISTIVE READ HEAD

Gerald A. Daughenbaugh, Tucson, Ariz.; Philip W. Koob, Concord, N.C.; Arthur E. Moxley, Longmont, Colo., and Joseph E. Wallace, Charlotte, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1979, Ser. No. 105,480
Int. Cl.[3] G11B *5/12, 5/22*
U.S. Cl. 360—113 6 Claims



1. A magnetoresistive head assembly consisting of

a silicon substrate having two sides;

a magnetoresistive element disposed on one side of said silicon substrate;

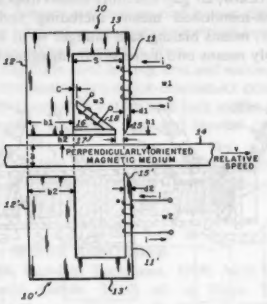
a first sapphire member bonded to said one side of said silicon substrate and said magnetoresistive element; and

a second sapphire member bonded to the other side of said silicon substrate whereby a sandwich configuration is formed so that said assembly realizes improved wear life, improved heat dissipation characteristics and improved ease in manufacture.

4,317,148
TRANSDUCER FOR PERPENDICULAR MAGNETIC RECORDING

Chao S. Chi, Worcester, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Jan. 24, 1980, Ser. No. 114,915
Int. Cl.³ G11B 5/25, 5/30, 5/22
U.S. Cl. 360—119 33 Claims



1. A transducer for perpendicular magnetic recording on a magnetic medium comprising

a core of magnetic material,

a coil disposed on said core,

said core comprising a recording member and a flux return member, said recording member and said flux return member, in use, being disposed adjacent said medium on one side thereof,

said flux return member having a substantially greater cross sectional area than said recording member,

further flux return means, in use, disposed adjacent said medium on the side thereof opposite said one side and spanning said recording and flux return members,

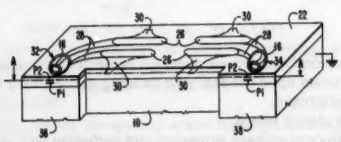
said recording member, flux return member and further flux return means being so arranged with respect to each other that current flowing through said coil generates closed lines of flux threading said flux return member, said recording member and said further flux return means and traversing said medium perpendicular thereto from said recording member to said further flux return means and,

means disposed between said recording member and said flux return member for reading data recorded on said medium.

4,317,149
MAGNETIC HEAD HAVING STATIC DISCHARGE MEANS

Karl H. Elser, and Russell R. Kerl, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 2, 1980, Ser. No. 155,348
Int. Cl.³ G11B 5/16, 5/25, 21/24
U.S. Cl. 360—126 6 Claims



1. A magnetic head assembly comprising:

an electrically conductive air-bearing slider support;

magnetic transducer means mounted to said slider support;

means for conducting electrical signals to and from said transducer means;

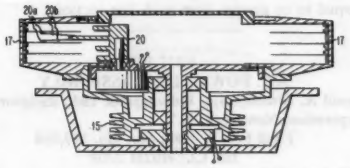
an insulating overcoat layer disposed over said magnetic transducer means; and

conductive paths formed in said insulating overcoat layer for providing low resistance bleed paths that bypass said transducer means so that static electrical charges are discharged at an effective distance from said transducer means.

4,317,150
FOIL RECORDING DISK STRUCTURES

Edward G. Gruss, Campbell, and Armin R. Tietze, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 10, 1979, Ser. No. 102,166
Int. Cl.³ G11B 5/82, 5/016
U.S. Cl. 360—135 7 Claims



1. A magnetic recording structure, comprising

a cylindrical support member,

a pair of circular tensioned metal magnetic foil members secured on opposite sides of said support member, said foil members having central openings therein, said foil members being secured to said support member only at their periphery and being spaced from the remainder of said support member,

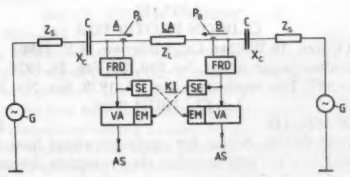
said support member being a generally cylindrical element having recessed portions on both of its surfaces inwardly of the periphery, said foil members being secured at their periphery to the periphery of said support member and being spaced from said recessed portions; and

means for rotating said recording structure past an associated magnetic transducing assembly.

4,317,151
APPARATUS FOR FAULT DIRECTION-COMPARISON PROTECTION

Ivan de Mesmaeker, Fislisbach, and Peter Müller, Nussbaumen bei Baden, both of Switzerland, assignors to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Dec. 17, 1979, Ser. No. 104,170
Claims priority, application Switzerland, Jan. 3, 1979, 12/79
Int. Cl.³ H02H 3/18
U.S. Cl. 361—69 5 Claims



1. An apparatus for the fault direction comparison protection of electrical lines containing at least one series capacitor, comprising:

a respective measuring and monitoring station provided at each end of a line section to be monitored and protected;

each measuring and monitoring station containing a fault direction detector;

each said fault direction detector containing a timer mechanism for zone switching;

a transmission channel means for fault direction data arranged between and operatively linking both stations;

at least one comparison-evaluation device provided for each station for the fault direction determination with respect to the line section to be protected and cooperating with said transmission channel means;

said fault direction detector of at least one station comprising a distance protection relay having line-image impedance which can be switched for correspondingly different protective zones with a timewise stagger between different impedance values; and

said fault direction detection, during a starting time interval up to a first zone switching time point, having correlated thereto by means of said timing mechanism an impedance value of the line image impedance which, with respect to the line section to be protected, is at least approximately equal to or greater than such line section.

4,317,152

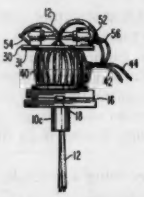
A.C. POWER LINE ASSEMBLY

Raymond A. Altenschulte, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 8, 1980, Ser. No. 119,964

Int. Cl.³ H02H *3/08*

U.S. Cl. 361—104 **6 Claims**



1. An A.C. power line assembly for a home instrument comprising:

a fuse board assembly;

an A.C. line choke including first and second wires;

an insulator collar suitable for engaging said fuse board assembly and said line choke, and including means for retaining said fuse board and line choke in position; and

an insulated line cord including a molded strain relief bushing adapted for mounting in said instrument, said bushing including means for locking said assembly in place in said instrument when installed, and means for engaging said insulator collar,

wherein said line cord, said fuse board, and said line choke are coupled to provide fuse protected and filtered A.C. power at the ends of said first and second wires.

4,317,153

CLIP-ON PROTECTOR

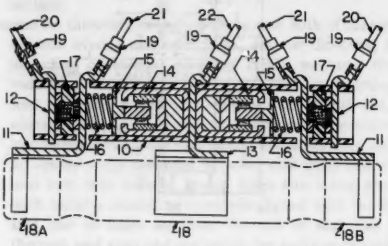
Gerald Coren, 18 Willben La., Plainview, N.Y. 11803

Continuation-in-part of Ser. No. 880,756, Feb. 24, 1978, Pat. No. 4,191,987. This application Sep. 12, 1979, Ser. No. 74,885

Int. Cl.³ H02H *9/06*

U.S. Cl. 361—119 **6 Claims**

1. A protection device for communications lines that are protected by a gas tube arrestor, the protection device having built-in fail-safe redundancy and comprising an elongated housing, electrical transfer plate means disposed in insulated spaced array in said housing and adapted to be electrically coupled to a given apparatus line, heat transfer plate means disposed in said housing and electrically insulated and spaced from said electrical transfer plate means, each of said electrical and heat transfer plate means including means extending from said housing which is adapted detachably to engage the respective electrodes of the gas tube arrestor such that said heat transfer plate means is in thermal and electrical communication with the common or grounded electrode of the gas tube arrestor, and each of said electrical transfer plate means is in respective electrical communication with a line-electrode of the gas tube arrestor, air gap assembly means disposed in said housing, the last-mentioned means including fusible means and a plunger, means biasing said plunger so as to urge said air gap assembly means into a pressured engagement against that portion of said heat transfer plate means which is disposed in said housing whereby said air gap assembly means is in thermal and electrical communication therewith, said plunger being in electrical communication with said electrical transfer plate means with the former adapted to ground the latter upon a fusing of said fusible means, circuit transfer plate means disposed in insulated spaced array in said housing and adapted to be electrically coupled to a given incoming line, and over-current protection means establishing electrical continuity between said circuit transfer plate means and said electrical transfer plate means until a sustained over-current condition causes said over-current protection means to open-circuit and electrically isolate an associated incoming and apparatus line.



4,317,154

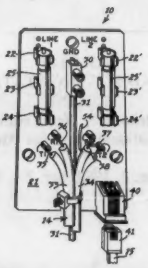
COMMUNICATION CIRCUIT PROTECTOR

Thomas M. Passarella, Rte. 1, Box 357, Florence, Ala. 35630

Filed May 16, 1980, Ser. No. 151,187

Int. Cl.³ H02H *1/00*

U.S. Cl. 361—119 **3 Claims**



1. A telephone circuit overload protector device adapted to be mounted upon the wall of a building containing a telephone set, comprising:

(a) a circuit board,

(b) an over-voltage protector unit including first and second power electrodes and a ground electrode,

(c) means mounting said over-voltage protector unit on said circuit board,

(d) first and second electrical telephone input leads electri-

cally connected respectively to said first and second power electrodes,

(e) a ground lead electrically connected to said ground electrode,

(f) a jack having first and second contacts mounted on said circuit board,

(g) a first lead on said circuit board electrically connecting said first contact and said first power electrode,

(h) a second lead on said circuit board electrically connecting said second contact and said second power electrode,

(i) said jack being adapted to receive in electrical communication a corresponding connector plug,

(j) an electrical telephone cord having first and second ends, said first end terminating in a quick-disconnect connector plug detachably receivable within said jack and in electrical communication with said first and second contacts, and

(k) means connecting said second end of said telephone cord to a telephone set contained within the building.

4,317,155

SURGE ABSORBER

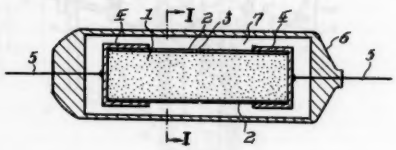
Mikio Harada, 1014; Kan-ichi Tachibana, 1019; Akio Uchida, 1019, and Takashi Saitoh, 1019, all of Oaza Yokoze, Yokozemura, Chichibu-gun, Saitama, Japan

Filed Aug. 20, 1979, Ser. No. 68,181

Claims priority, application Japan, Mar. 27, 1979, 54-35773

Int. Cl.³ H02H *9/04*

U.S. Cl. 361—120 **7 Claims**



1. A surge absorber comprising a plurality of areas of conductive ceramic thin film formed on the surface of a molded insulating body having a relative inductive capacity of more than one and separated from each other by a streak of less than 200 μm in width, said conductive ceramic thin film being one selected from the group consisting of conductive metal oxides and interstitial nitrides, electrodes consisting of an anticorrosive and highly conductive metallic material directly fixed to both ends of said plurality of areas of conductive ceramic thin film and apart from said streak respectively, and at least one gas selected from the group consisting of rare gases and nitrogen gas sealed between the electrodes by means of an insulating material, so as to generate an electron emission through said streak at a first stage and then generate a creeping discharge between said electrodes at a second stage when a surge voltage is applied to said electrodes.

4,317,156

LOCKING DEVICE

Rupert Stangl, Oberwerrn, Fed. Rep. of Germany, assignor to Sachs-Systemtechnik GmbH, Schweinfurt, Fed. Rep. of Germany

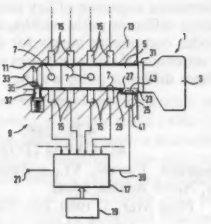
Filed May 30, 1979, Ser. No. 43,681

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1978, 2824684

Int. Cl.³ E05B *27/00*

U.S. Cl. 361—171 **7 Claims**

1. Locking device comprising a key having a locking code thereof and a reading device for reading the locking code, said key comprising a grip portion, an information carrier attached to said grip portion, and magnetic information elements located on said information carrier and arranged in a selected pattern for forming the locking code on the key, said reading device including reading elements susceptible to a magnetic field and arranged to read the locking code on said key and to compare the locking code as read to a predetermined locking code, wherein the improvement comprises that said information carrier is elongated and projects outwardly from said grip portion, said information carrier having an axis extending in the elongated direction thereof and an outer peripheral surface extending in the direction of and laterally surrounding said axis, said magnetic information elements comprise a plurality of first information elements located on, along and around the outer peripheral surface of said information carrier in the direction of the axis thereof and a second information element spaced in the axial direction of said information carrier from said first information elements, a projection on said information carrier extending outwardly from said outer peripheral surface transversely of said axis of said information carrier, said second information element located on said projection, said reading device comprising a housing having an elongated



opening extending therein arranged to receive said information carrier, said projection arranged to interengage the opening in said housing so that said information carrier can be inserted in only one position relative to said reading elements in said opening, said reading elements comprising first reading elements and a second reading element located within said housing along the opening therein, said first reading element arranged to read said first information elements and said second reading element arranged to read said second information element, and the dimension extending transversely from the axis of said information carrier outwardly to said second information element on said projection is greater than the dimension extending transversely from the axis of said information carrier to said first information elements on the outer peripheral surface of said information carrier so that said second reading element is excited during the insertion of said key into the opening in said housing of said reading device only by said second information element.

4,317,157

LOCKING DEVICE FOR UTILITY LOCKS WITH A KEY SIGNAL TRANSMITTER AND A KEY SIGNAL RECEIVER

Martin Eckloff, Ziegelweg 4, 8951 Irsee, Fed. Rep. of Germany

Filed Aug. 30, 1979, Ser. No. 71,358

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1978, 2838056

Int. Cl.³ E05B *49/00*; H04Q *3/00*

U.S. Cl. 361—172 **16 Claims**

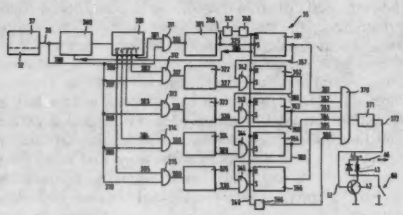
1. In a locking device for utility locks having a lock bolt; wherein a key signal transmitter is disposed in a portable housing and a stationary key signal receiver is disposed in the vicinity of the lock bolt and controls the operation of the lock bolt, said transmitter having a coder for generating a predetermined code specific to the locking device, said receiver having a decoder for decoding the code generated by said coder, the improvement comprising:

said coder comprising,

an impulse generator for producing pulses at a constant pulse repetition rate, and

pulse width modulation means coupled to said impulse gen-

erator for producing a key pulse upon each generation of a pulse by said impulse generator, each key pulse having a pulse width selected between predetermined limits within the period determined by the pulse repetition rate of said impulse generator, said pulse width generator producing a



predetermined sequence of key pulses characterized by at least three different pulse widths; and

said decoder comprising means for decoding the predetermined sequence of said key pulses characterized by said at least three different pulse widths.

4,317,158

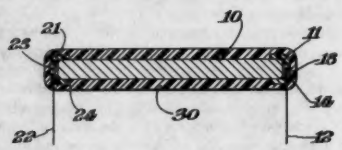
AC CAPACITOR

Andrew Dequasie, Pownal, Vt., assignor to Sprague Electric Company, North Adams, Mass.

Filed Mar. 3, 1980, Ser. No. 126,751

Int. Cl.³ H01G *1/13*

U.S. Cl. 361—272 **13 Claims**



1. An AC capacitor comprising a convolutely wound capacitor section of electrodes separated by dielectric films, lead attachments to said electrodes extending from at least one end of said section, a coating over at least both ends of said section and said lead attachments, and an outer protective casing over said section, said coating being partially cured urethane with about 50% to about 75% unreacted isocyanate groups to improve both AC life and corona properties of said capacitor.

4,317,159

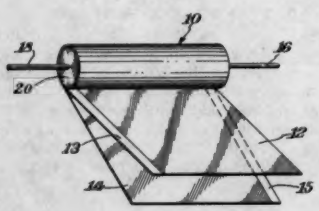
AC CAPACITOR AND IMPREGNANT THEREFOR

Andrew Dequasie, Pownal, Vt., assignor to Sprague Electric Company, North Adams, Mass.

Filed Dec. 10, 1979, Ser. No. 101,618

Int. Cl.³ H01G *4/22*

U.S. Cl. 361—318 **6 Claims**



1. An AC metallized film capacitor comprising two contiguously wound aluminized polypropylene films impregnated with a dielectric fluid selected from the group consisting of ester and hydrocarbon dielectric fluids containing 1 to 20% of an isocyanate containing unreacted isocyanate groups as additive to improve AC life, said isocyanate being selected from the group consisting of a C_{36}-aliphatic diisocyanate, a polymethylene polyphenyl isocyanate, a diphenylmethane diisocyanate, a diphenylmethane diisocyanate prepolymer, a liquid rincinoleate urethane prepolymer, and a toluenediisocyanate-free diisocyanate prepolymer.

4,317,160

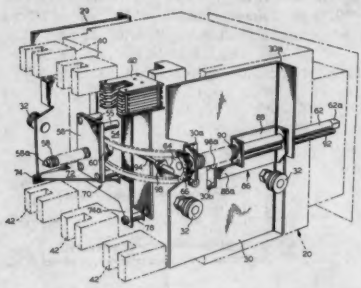
ELECTRICAL SWITCHBOARD HAVING IMPROVED DRAWOUT APPARATUS

Robert S. Tillson, Terryville; William F. Olashaw, Plainville, and James H. Postlethwait, Simsbury, all of Conn., assignors to General Electric Company, New York, N.Y.

Filed Jul. 31, 1980, Ser. No. 173,949

Int. Cl.³ H02B *1/04*

U.S. Cl. 361—339 **10 Claims**



1. An electrical switchboard comprising, in combination:

A. an electrical device having a transverse array of rearwardly extending line terminal disconnects and a transverse array of rearwardly extending load terminal disconnects in vertically spaced relation to said line terminal array;

B. a transverse array of switchboard line terminal disconnects and a transverse array of switchboard load terminal disconnects disposed at the rear of a switchboard cubicle, said switchboard disconnect arrays being in vertically spaced relation;

C. rails mounted to opposed sides of the switchboard cubicle;

D. means mounting said electrical device on said rails for racking movement between an engaged position, wherein said device and switchboard line and load terminal disconnects are respectively electrically mated, and a disengaged position, wherein said device and switchboard line and load terminal disconnects are respectively electrically unmated; and

E. a racking mechanism including

(1) a single nut fixedly mounted to one of said device and switchboard.

(2) a single lead screw rotatably mounted to the other of said device and switchboard, the respective mounted positions of said nut and lead screw being centrally located between said transverse arrays of switchboard and device line and load terminal disconnects such that, with threaded interengagement, rotation of said lead screw creates a single line of force effective in propelling racking movement of said device between said engaged and disengaged positions and incidentally achieving essentially uniformly distributed mating and

unmating forces at the individual switchboard and device line and load terminal disconnects, and

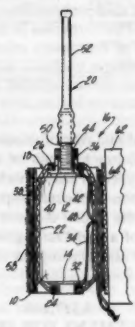
(3) a right angle drive train mounted by the other of said device and switchboard for communicating rotational drive to said lead screw from a manual drive input applied at a frontal switchboard cubicle location.

4,317,161

COMBINED BATTERY HOLDER AND SWITCH

Samuel Aiello, Jr., Royal Oak, Mich., assignor to Ilo Engineering, Inc., Troy, Mich.

Filed Nov. 30, 1979, Ser. No. 98,937
Int. Cl.[3] F21L *15/08*
U.S. Cl. 362—103 14 Claims



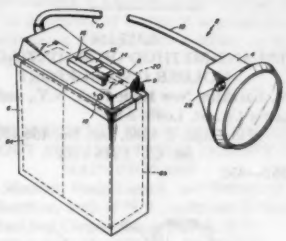
1. A combined battery holder and switch for use with an electrically energized device comprising a circumferentially continuous, annular, resiliently elastic member adapted and dimensioned to be stretched around an elongate cylindrical battery having a terminal at each of the axially opposite ends thereof so that the elastic member encircles the battery lengthwise in tight fitting relation, said elastic member having a pair of diametrically opposed fittings thereon, each adapted to overlie a terminal at the opposite ends of the battery when stretched lengthwise thereover, one of said fittings comprising an electrical contact member to which a conductor for the electrically energized device is fixedly connected, said contact being adapted to be biased into contacting engagement with one of said terminals by the resiliency of said elastic member when so stretched over the battery, the other fitting being adapted to be biased into contact with the other terminal at the opposite end of the battery by the elastic member and including a sleeve formed of an electrically conductive material and to which a second conductor for the electrically energized device is fixedly connected, said sleeve being axially aligned with said other terminal of the battery, said fitting also including an electrically insulating member arranged to lie between said sleeve and said other terminal of the battery when the sleeve is stretched over the battery such as to insulate the sleeve from the battery terminal and a stud formed of electrically conductive material within said sleeve and in electrical contact therewith, said stud being axially displaceable in said sleeve while in electrical contact therewith into and out of contacting engagement with said other terminal to open and close the circuit through said electrical device.

4,317,162

BATTERY OPERATED LUMINAIRE WITH EMERGENCY SWITCHING MEANS

Raymond R. Richards, Milton, and John E. Gulliksen, Shrewsbury, both of Mass., assignors to Koehler Manufacturing Co., Marlborough, Mass.

Filed May 2, 1980, Ser. No. 146,351
Int. Cl.[3] F21V *33/00*
U.S. Cl. 362—106 13 Claims



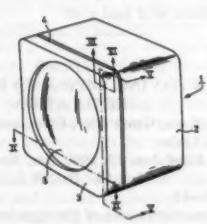
1. A lead-acid battery and cap lamp apparatus, said apparatus comprising a headpiece, a battery and a cable for connecting the headpiece to the battery through a manually operated switch in the headpiece to selectively energize incandescent lamp means therein, said battery containing rechargeable cell groups of equal voltage and at its upper side presenting a detachable battery top occurring in spaced relation above the rechargeable cell groups to define a space of limited extent, adjustable switching means mounted in the battery top and extending into the said space, electrical circuit means including electrical contacts engageable by the siwtching means in one position of adjustment thereof to provide for operating the cell groups in series, said adjustable switching means being movable into engagement with additional contact means in the said electrical circuit means such that the cell groups are operated in parallel to energize the lamp means at a relatively lower level of light intensity than the intensity of the lamp means when the cell groups are operated in series, said electrical circuit means further including means for supplying current to the lamp means by the cell groups during parallel operation at a value greater than the value of the current supplied to the lamp means by the cell groups during series operation divided by the number of cell groups.

4,317,163

LUMINAIRE FOR AN ELECTRIC LAMP

Willem J. F. Bout, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 10, 1980, Ser. No. 129,067
Claims priority, application Netherlands, Mar. 19, 1979, 7902135
Int. Cl.[3] B60Q *3/04;* F21M *1/00*
U.S. Cl. 362—362 4 Claims



1. A luminaire for an electric lamp having a bipartite housing

one part of which engages around the other part and is connected thereto by means of a double-hinge situated within the housing, of which double-hinge a first shaft is connected to the side wall of a first part of the housing and the second shaft is connected to the second part of the housing, both shafts being incorporated in a rigid hinge intermediate member while being spaced from each other and being parallel to each other, characterized in that the rotation of the second part of the housing about the second shaft of the double-hinge is restricted by a stop.

4,317,164

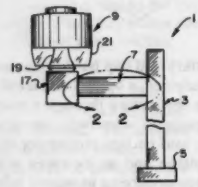
SYSTEM AND METHOD OF MOUNTING A LAMP HOLDER ON A SUPPORT

Vincent M. Karaktin, New Hyde Park, N.Y., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Apr. 2, 1980, Ser. No. 136,435

Int. Cl.³ F21S *1/02*

U.S. Cl. 362—432 **9 Claims**



1. In a lighting fixture including a vertical support post, and a support arm cantilevered secured to said post and extending horizontally outwardly therefrom, at least one end of said support arm being hollow, wherein the improvement of this invention comprises: means for rigidly cantilever securing said support arm to said post, said post having a mounting bracket rigidly secured to the exterior thereof, said post mounting bracket having a portion thereof secured to said post, an upwardly extending flange interconnected to said securement portion, one face of this last-said flange facing toward said post being inclined with respect to the vertical such that its top is spaced farther from said post than its bottom, said support arm having a support mounting bracket installed internally therewithin adjacent said post, said support mounting bracket having a portion adapted to be rigidly secured to an upper wall of said support arm on the inside thereof, said support mounting bracket having a flange extending downwardly from said securement portion, one face of this last-said flange facing away from said post being inclined with respect to the vertical so that the bottom of this last said flange face is closer to said post than its top, said inclined flange faces of both of said mounting brackets being wedgingly cooperable with one another so that upon said support arm being brought substantially into abutting relation with said post and upon said support arm and said post being moved vertically relative to one another, said inclined faces of said flanges cooperate with one another so as to draw and to hold said support arm in cantilevered abutting relation with said post.

4,317,165

INVERTER HAVING IMPROVED EFFICIENCY AND REGULATION

James D. Sullivan, Grove City, Ohio, assignor to Vanner, Inc., Columbus, Ohio

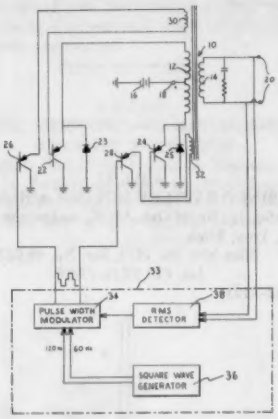
Filed Jun. 17, 1980, Ser. No. 160,555

Int. Cl.³ H02M *1/12*

U.S. Cl. 363—41 **11 Claims**

1. In an inverter circuit of the type including a transformer having a center tapped primary to which a dc source is connected, a pair of push-pull connected bipolar transistor switching means connected to the ends of said primary for alternately applying said dc source to opposite halves of said primary, said switching means each having a control input, and a control means connected to said control inputs to control the alternate switching of said switching means, the improvement comprising:

a pair of windings, magnetically coupled to said transformer,



a different one of said pair of windings connected in series with the control input circuit of each of said switching means, wherein each of said switching means comprises a pair of Darlington-connected bipolar transistors having said winding as the circuit element connecting the base of the output one of a said Darlington pair to the output of the input one of said Darlington pair.

4,317,166

CIRCUIT ARRANGEMENT FOR SELF-COMMUTATED INVERTERS

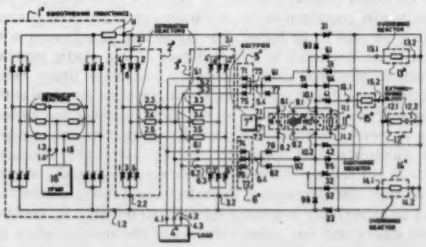
Jiri Winkler; Josef Cibulka; Jan Bryksi; Richard Jelinek, all of Prague; Jan Krtek, Karlovy Vary; Vladimir Mickal, Pilsen; Jaroslav Hlousek, and Milan Kondr, both of Prague, all of Czechoslovakia, assignors to CKD Praha, oborovy podnik, Prague, Czechoslovakia

Filed Jan. 2, 1980, Ser. No. 109,187

Claims priority, application Czechoslovakia, Jan. 2, 1979, 40-79

Int. Cl.³ H02M *7/515*

U.S. Cl. 363—138 **7 Claims**



1. An inverter apparatus for energizing an AC load, said inverter apparatus comprising a plurality of inverter output terminals connected to said AC load and a source of DC current having a first and second DC output terminal, an inverter circuit comprising a first main thyristor circuit comprising a first and second group of main thyristors, the cathodes of said

first group of main thyristors being coupled, respectively, to the anodes of said second group of main thyristors, while the anodes of said first group of main thyristors are coupled to said first DC terminal, first connecting means for connecting said cathodes of said first group of main thyristors, respectively, to a first selected one of said plurality of inverter output terminals, and a second main thyristor circuit, the improvement comprising:

a first commutation circuit comprising a first commutation thyristor having an anode, connected to said first DC output terminal, a cathode and a gate, an extinguishing circuit connected to said cathode of said first commutation thyristor, a second commutation thyristor having an anode, connected to said extinguishing circuit, a cathode and a gate, a first separating diode connected to said cathode of said second commutating thyristor, and a first block of accumulating diodes having a first DC block terminal, comprising the anodes thereof, connected to said cathode of said first separating diode and a plurality of first accumulating diode output terminals, comprising the cathodes thereof, each being connected to a corresponding one of said inverter output terminals, a second commutation circuit coupled to said second main thyristor circuit and comprising a second block of accumulating diodes having a plurality of anodes, each being connected to a corresponding one of said inverter output terminals, and a plurality of cathodes connected in common to a second DC block terminal, a second separating diode connected to said second DC block terminal, an accumulating capacitor connected to said second separating diode, and a third separating diode interconnected between said accumulating capacitor and said first DC block terminal;

wherein said thyristors are energized so that said current passes from said first main thyristor circuit to said first commutation circuit, and from said first commutation circuit to both said second main thyristor circuit and said second commutation circuit;

and further comprising means for subsequently blocking said current in said second commutation circuit, whereby said current has transferred from said first main thyristor circuit to said second main thyristor circuit.

4,317,167

CIRCUIT ARRANGEMENT FOR THE PROCESSING OF INFORMATION

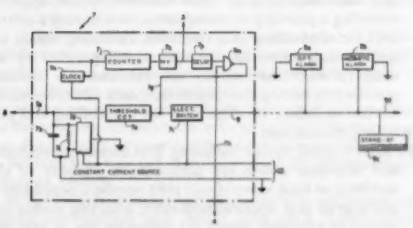
Alfred Hartig, and Harald Beckermann, both of Essen, Fed. Rep. of Germany, assignors to Ruhrtal Elektrizitäts-Gesellschaft Hartig GmbH & Co., Essen, Fed. Rep. of Germany

Filed Sep. 20, 1979, Ser. No. 77,474

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1978, 2841073

Int. Cl.³ G06F *15/46;* **G05B** *23/02;* **G06F** *11/00*

U.S. Cl. 364—185 **10 Claims**



1. An information-processing circuit comprising, in combination:

a microprocessor-controlled unit responsive to input signals of an installation representing parameters of the operation thereof to be monitored and producing output signals for controlling said operation, said microprocessor-controlled unit including a microprocessor having a power supply source and a memory cooperating with said microprocessor; and

a control unit connected to said microprocessor for continuously monitoring the operation thereof, said control unit being responsive to a control signal outputted from said microprocessor and including means for generating a failure signal upon detection of a functional failure of said microprocessor, said microprocessor outputting a train of control signals in predetermined time-spaced relationship which pass through at least one stage of the microprocessor prior to appearing at a control terminal thereof, said control unit being responsive to a failure in the train of control signals.

4,317,168

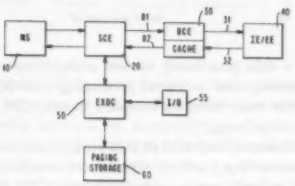
CACHE ORGANIZATION ENABLING CONCURRENT LINE CASTOUT AND LINE FETCH TRANSFERS WITH MAIN STORAGE

Benedicto U. Messina, Poughkeepsie, and William D. Silkman, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 23, 1979, Ser. No. 96,860

Int. Cl.³ G06F *13/00*

U.S. Cl. 364—200 **40 Claims**



1. A cache accessing system for a store-in cache for enabling a processor to have fast access to any transfer unit of data in the cache, each line of cache data being addressed on a main storage (MS) line address boundary, each line being comprised of plural transfer units, each transfer unit being addressed on a MS transfer unit address boundary, the cache accessing system comprising:

a cache array containing a plurality of cache accessible units, each cache accessible unit have a plurality of transfer units, each access of the cache in one cache cycle capable of accessing the plurality of transfer units comprising one cache accessible unit,

directory means for receiving cache access requests and connected to the cache array for controlling the addressing of the cache for each cache accessible unit required by a request,

cache registering means for registering plural transfer units into a cache accessible unit,

first cache bus means connected to the cache registering means for transferring one transfer unit per cycle from a first source to the cache registering means,

cache write accessing means for writing into each cache accessible unit from the cache registering means at an addressed location in the cache in one cycle,

cache read accessing means for reading an accessible unit out of the cache in one cycle,

second cache bus means for outputting one transfer unit per cycle from the cache reading means to a second source,

cycle control means connected to the cache for controlling cache accesses an alternate cycles by the cache write accessing means and by the cache read accessing means,

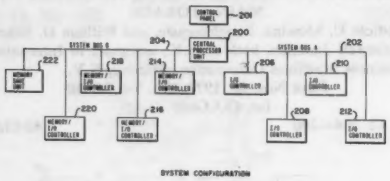
the first bus means and second bus means being capable of simultaneously transferring the transfer units on the same cycle in which either the cache write access means or the cache read access means is accessing an accessible unit in the cache,

whereby the cache access rate being equal to the combined transfer unit rates on both the first and second cache bus means.

4,317,169
DATA PROCESSING SYSTEM HAVING CENTRALIZED MEMORY REFRESH

William Panepinto, Jr., Tewksbury; Ming T. Miu, Chelmsford; Chester M. Nibby, Jr., Peabody, and Jian-Kuo Shen, Watertown, all of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Feb. 14, 1979, Ser. No. 12,081
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—200 **11 Claims**



SYSTEM CONFIGURATION

1. In a data processing system comprising a rechargeable main memory and a central processing unit (CPU), said rechargeable main memory coupled to said CPU, said system further comprising:

A. first means, included in said rechargeable main memory, for receiving a refresh signal from a refresh means;

B. said refresh means, included in said CPU and coupled to said first means, said refresh means for generating said refresh signal at least once during a period of time equal to a first predetermined time interval and for generating said refresh signal whenever it is determined that said CPU will not require access to said rechargeable main memory before the refreshing of said rechargeable main memory can be completed and wherein each generation of said refresh signal restarts the expiration of said first predetermined time interval;

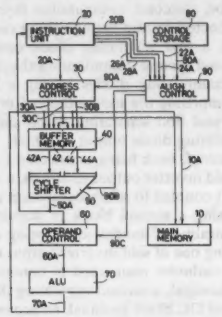
C. second means, coupled to first means and included in said rechargeable main memory, for refreshing said rechargeable main memory in response to said refresh signal; and

D. third means, coupled to said first means and said second means and included in said rechargeable main memory, for inhibiting said second means from responding to said refresh signal if said second means has already performed a refresh of said rechargeable main memory within a second predetermined time interval, said second predetermined time interval determined by the refresh frequency proximately required to maintain information in said rechargeable main memory, said first predetermined time interval being less than said second predetermined time interval, and wherein the inhibiting of said second means from performing a refresh of said rechargeable main memory in response to said refresh signal more frequently than once per said second predetermined time interval saves energy by preventing the refreshing of said rechargeable main memory at a frequency greater than the frequency proximately required to maintain the information in said rechargeable main memory and whereby because all refreshing of said rechargeable main memory is done in response to said refresh signal normally generated by said CPU, the need for logic within said CPU or rechargeable main memory to handle the case of an attempt by said CPU to access said rechargeable main memory during refreshing is eliminated.

4,317,170
MICROINSTRUCTION CONTROLLED DATA PROCESSING SYSTEM INCLUDING MICRO-INSTRUCTIONS WITH DATA ALIGN CONTROL FEATURE

Kenichi Wada, Zama, and Mamoru Hinai, Hadano, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 27, 1979, Ser. No. 79,247
Claims priority, application Japan, Jan. 19, 1979, 54/3956
Int. Cl.³ G06F *9/00, 9/22, 9/34, 9/28*
U.S. Cl. 364—200 **12 Claims**



1. A data processing system which comprises:

(a) instruction means including means for decoding stored macroinstructions in order to generate addresses of operand data to be used in execution of said macroinstructions and a length indication of the entire length of that operand data;

(b) storage means for storing said operand data including first and second storage means, and means connected to said decoding means for reading out first and second partial operand data in parallel from said first and second storage means, respectively, in response to one of said operand addresses, said first and second partial operand data being located in a continuous address region having a predetermined length in said storage means and being the data specified by said one of said operand addresses;

(c) positioning means connected to said first and second storage means for selectively positioning data read therefrom;

(d) operation executing means connected to said positioning means for executing operation on said positioned data;

(e) control storage means connected to said instruction means for storing microinstruction sequences each corresponding to one of said macroinstructions for executing said macroinstructions, each microinstruction sequence including a plurality of microinstructions having a control field for controlling said operation executing means and said storage means so that operations specified by said decoded macroinstructions are executed on operands specified by said operand addresses, each microinstruction further including an align field for controlling said positioning means; and

(f) align control means including first means connected to said decoding means for generating a plurality of shift numbers, at least some of said shift numbers depending on said one of said operand addresses; selecting means connected to said first means for selecting one of said shift numbers in response to said align field; second means connected to said first and second storage means for cycle-shifting said first and second partial operand data in combination by an amount equal to said selected shift number; third means for outputting a plurality of mask pattern signals for indicating a part of said cycle-shifted data to be masked in response to said length indication of the entire length of said operand data, at least one of said

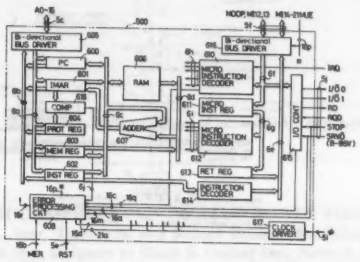
mask pattern signals depending on said one of said operand addresses; fourth means for selecting one of said mask pattern signals in response to said align field; and fifth means for masking said cycle-shifted data in response to said selected mask pattern signal.

4,317,171

LSI MICROPROCESSOR HAVING AN ERROR PROCESSING CIRCUIT

Hideo Maejima, and Kunihiko Ohnuma, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 9, 1979, Ser. No. 37,459
Claims priority, application Japan, May 12, 1978, 53-55601
Int. Cl.³ G06F *3/00, 11/00*
U.S. Cl. 364—200 **6 Claims**



1. An LSI microprocessor comprising an instruction fetch portion and an instruction execute portion which conduct the fetch of an instruction and the execution of an instruction from a main memory disposed outside said LSI microprocessor and which store instructions and operands therein, independently of each other under a control of a microprogram stored in a microprogram memory, a pipeline control being made while synchronizing both of the portions, said instruction fetch portion comprising:

(a) a first bidirectional bus driver for delivering microprogram address information to a microprogram counter of said microprogram memory and receiving a micro instruction from said microprogram memory,

(b) a second bidirectional bus driver for delivering an address to said main memory and receiving an instruction word or operand from said main memory,

(c) a micro instruction decoder which is connected to said first bidirectional bus driver through a first input bus and which decodes the received micro instruction to obtain various control signals,

(d) an input/output controller which is connected to said first bidirectional bus driver through the first input bus and which makes a control with an input/output device including said main memory,

(e) a program counter, an internal memory address register, a protection register, a memory register and an instruction register which are connected to said second bidirectional bus driver through second input and output buses,

(f) a random access memory and an adder which are connected to the program counter, the internal memory address register, the memory register and the instruction register through a bidirectional bus and which are used for determining an operand address,

(g) an instruction decoder which decodes a content of said instruction register and which delivers a microprogram address pattern to said microprogram counter of said microprogram memory through said first bidirectional bus driver,

(h) a comparator which detects a memory protection error and which delivers a memory protection error signal by comparing the operand address being stored in the interval memory address register and a protection area stored in said protection register, and

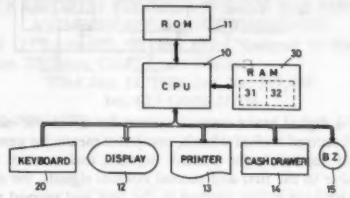
(i) an error processing circuit which receives the memory protection error signal and an externally detected memory error signal concerning said main memory, said error processing circuit including means for blocking the delivery of a clock to write to the registers connected to the bidirectional bus and means for delivering a reset signal to clear the microprogram counter and start an error processing microprogram in response to receiving one of said error signals.

4,317,172

ELECTRONIC CASH REGISTER

Shuji Nakano, Takatsuki, Japan, assignor to Omron Tateisi Electronics Co., Japan

Filed Oct. 22, 1980, Ser. No. 199,650
Claims priority, application Japan, Oct. 24, 1979, 54-137919
Int. Cl.³ G06F *15/02, 15/20*
U.S. Cl. 364—405 **5 Claims**



1. An electronic cash register having a first mode for entry of registering information and a second mode for withdrawal of said registering information, comprising:

information entry means for entry of registering information including information concerning a price of a commodity being sold and a commodity department code representing a commodity department of said commodity being sold;

mode selecting means for selecting either said first mode for entry of said registering information by means of said information entry means or said second mode for withdrawal of said registering information registered in said first mode;

first storage means including a plurality of storing regions corresponding to a plurality of commodity department codes and responsive to said mode selecting means, for accumulating and storing, while in said first mode, in each of the respective storing regions the information concerning a total amount of the prices of the commodities for each of said commodity department codes obtained through accumulation of said information entered by said information entry means concerning the price of the commodity separately for each said commodity department code;

second storage means including a plurality of storing regions corresponding to said plurality of commodity department codes, for storing in advance a desired outputting order of said information concerning a total amount of the prices of the commodities for each of said commodity department codes to be outputted, which is stored in each of said storing regions of said first storage means;

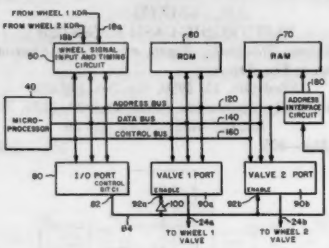
representation means for visibly representing said information concerning said total amount for each of said commodity department codes stored in said first storage means; and

output control means responsive to said mode selecting means for providing in succession in said second mode said information concerning said total amount for each of said commodity department codes stored in said first storage means to said representation means in said outputting order of the respective commodity department codes stored in said second storage means.

4,317,173
MULTIPLE WHEEL MEMORY SELECTION DEVICE FOR BRAKE CONTROL SYSTEM

Thomas Skarvada, Woodland Hills, Calif., assignor to Crane Co., Chicago, Ill.

Filed May 7, 1980, Ser. No. 147,384
Int. Cl.³ G06F *15/20*; B60T *8/00*
U.S. Cl. 364—426 **35 Claims**



1. In a digital brake control system for a vehicle including first and second braked wheels, computer means for generating first and second brake control signals, and control means, responsive to the first and second control signals, for modifying the braking action applied to the first and second wheels, the improvement comprising:

a digital memory device having a plurality of address terminals including a first address terminal and a plurality of additional address terminals, said memory device including means for storing first and second blocks of parameters associated with the first and second wheels, respectively;

an address bus having a plurality of conductors, each of which extends between the computer means and a respective one of the plurality of additional address terminals;

an output port coupled to the computer means, said port including a control bit which can be placed in one of two logic control states by the computer means; and

means for connecting the control bit to the first address terminal such that the control bit can be used to control the logic state of the first address terminal, without affecting the state of the address bus, such that the computer means can select one of the first and second blocks of parameters for direct addressing via the address bus by placing the control bit in a respective one of the two logic control states.

4,317,174
RISER ANGLE POSITIONING SYSTEM AND PROCESS

Q. Wayne Dean, Simonton, Tex., assignor to The Offshore Company, Houston, Tex.

Filed Feb. 28, 1980, Ser. No. 125,804
Int. Cl.³ E21B *44/00*; G06F *15/20*
U.S. Cl. 364—432 **54 Claims**

1. A riser angle positioning system for positioning a floating vessel having a riser extending to an ocean floor, said system comprising:

acoustic means on the ocean floor for generating acoustic signals;

sensor means, one positioned at the top of said riser and one positioned at the bottom of said riser, for generating respective sensor signals indicating the respective angles of said riser at said top and bottom, respectively, of said riser;

compass means for providing coordinate data;

converting means for converting said acoustic signals to acoustic data; and

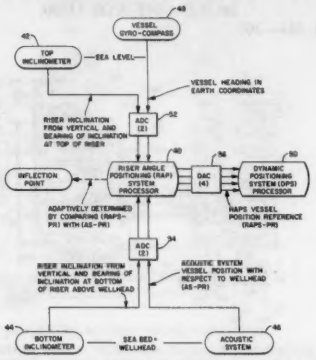
processor means responsive to said acoustic data from said converting means, to said respective sensor signals from said sensor means, and to said coordinate data from said compass means for processing said acoustic data and said respective angles of said riser at the top and bottom, respectively, of said riser, and for deriving positioning data for positioning said floating vessel.

28. In a positioning system for positioning a floating vessel having a riser extending between said floating vessel and an ocean floor, wherein acoustic signals are generated from the ocean floor, a riser angle positioning method comprising the steps of:

receiving said acoustic signals;

converting said acoustic signals to acoustic data;

generating measurement signals corresponding to measurement of respective angles of the riser at the top and bottom, respectively, of the riser;


VESSEL GYRO-COMPASS
TOP INCLINOMETER
SEA LEVEL
VESSEL HEADING IN EARTH COORDINATES
RISER INCLINATION FROM VERTICAL AND BEARING OF INCLINATION AT TOP OF RISER
ADC (2)
INFLECTION POINT
RISER ANGLE POSITIONING (RAP) SYSTEM PROCESSOR
DAC (4)
DYNAMIC POSITIONING SYSTEM (DPS) PROCESSOR
ADAPTIVELY DETERMINED BY COMPARING (RAPS-PR) WITH (AS-PR)
RAPS VESSEL POSITION REFERENCE (RAPS-PR)
ADC (2)
RISER INCLINATION FROM VERTICAL AND BEARING OF INCLINATION AT BOTTOM OF RISER ABOVE WELLHEAD
ACOUSTIC SYSTEM VESSEL POSITION WITH RESPECT TO WELLHEAD (AS-PR)
BOTTOM INCLINOMETER
SEA BED-WELLHEAD
ACOUSTIC SYSTEM

initially approximating an inflection point as being located midway between the top and bottom of the riser;

determining, based on said acoustic data and in accordance with a two-axis X-Y coordinate system, the X and Y coordinates of the distance from the top of the riser to the inflection point, and the X and Y coordinates of the distance from the inflection point to the bottom of the riser;

adding the respective X and Y coordinates to obtain respective sums indicating the total separation between the top and bottom of the riser; and

applying said respective sums to said positioning system.

4,317,175
DYNAMIC RATE INTEGRATING DEMAND MONITOR

Thomas L. Sterling, Belmont, and James L. Kirtley, Jr., Brookline, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Nov. 13, 1979, Ser. No. 93,429
Int. Cl.³ G01R *11/57*
U.S. Cl. 364—464 **9 Claims**

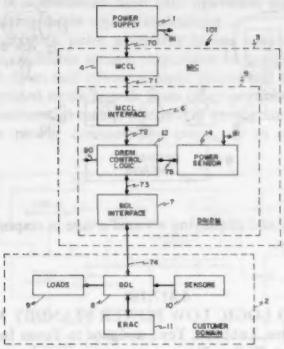
1. A dynamic rate integrating demand monitor that comprises, in combination:

means for repeatedly measuring electric power to a customer load at successive time duration intervals short compared to the time interval during which power supply load conditions change so as to create an imbalanced supply system;

means for accepting electrical communication of time-varying price determining data from a power utility to be used to determine a time-varying charge rate applied to the electric power measured at each duration interval of time;

means to multiply the power at each duration interval of time with the charge rate at the corresponding duration

interval of time to produce an incremental expenditure rate for energy used; and



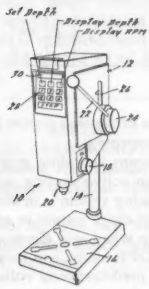
means to integrate said sequence of incremental expenditure rates to determine a customer charge.

4,317,176

MICROCOMPUTER CONTROLLED POWER TOOL

David A. Saar, Timonium, and Robert Bradus, Randallstown, both of Md., assignors to Black & Decker Inc., Newark, Del.

Filed Mar. 24, 1980, Ser. No. 133,464
Int. Cl.³ G06F *15/46*; H02P *7/28*
U.S. Cl. 364—474 **5 Claims**



1. In a drill press for cutting a workpiece including a motor drivingly coupled to a cutting implement and position control means for controlling the position of said cutting implement; the improvement comprising an electronic control circuit for controlling and monitoring the operation of the power tool including:

a speed sensor operatively associated with said motor for monitoring the rotational speed of said motor and producing a speed signal in accordance therewith;

a position sensor operatively associated with said position control means for sensing a relative change in the position of said cutting implement relative to a reference position and producing a position signal in accordance therewith;

a digital display for displaying information pertaining to the operating condition of the drill press including speed information and position information;

a keyboard for selectably determining the information to be displayed on said digital display and for establishing said reference position;

a microcomputer interfaced with said keyboard and said digital display and programmed to calculate the rotational speed of said motor from said speed signal, calculate from said position signal the position of said cutting implement relative to said reference position, provide to said digital display the information designated via said keyboard, and monitor one or more predetermined operating parameters of said motor in accordance with information derived from said speed signal and provide predetermined code signals to said digital display for display thereon whenever one of said operating parameters exceed programmed limits; and

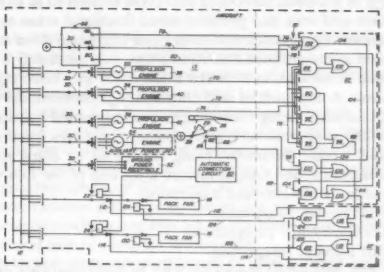
said microcomputer being programmed to monitor in accordance with information derived from said speed signal the speed, rate of deceleration, and temperature of said motor, and to produce code signals upon detection of a stall condition, an imminent kickback condition and an overload condition.

4,317,177

POWER PRIORITY CONTROL SYSTEM FOR AIRCRAFT AND TEST APPARATUS THEREFOR

Donald O. Burnworth, Arvada, Colo., assignor to Martin P. Miller, Littleton, Colo., a part interest

Filed Jan. 14, 1980, Ser. No. 111,603
Int. Cl.³ G08B *21/00*
U.S. Cl. 364—483 **22 Claims**



1. In an aircraft of the type comprising electrical power generating means connected to supply electrical power to an electrical supply bus within said aircraft and means for automatically connecting another electrical device of predetermined electrical load to said electrical supply bus in addition to other electrical devices previously connected to said supply bus upon positioning of a wing control surface of said aircraft in a predetermined position, an inventive system for automatically operatively disconnecting said additional electrical device from said electrical supply bus, comprising in combination:

first means operatively associated with said wing control surface for supplying a signal indicative of said wing control surface attaining said predetermined position, said signal supplied by said first means defining a wing surface signal;

second means operatively associated with said electrical power generating means for supplying a signal representative of the maximum capability of said power generating means for supplying electrical power to said supply bus, said signal supplied by said second means defining a generator signal;

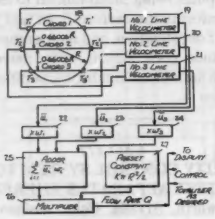
logic means connected to receive the wing surface and generator signals respectively from said first and second means and for supplying a disconnect signal upon the wing control and generator signals attaining a predetermined relationship; and

switching control means operatively connected with said additional electrical device and said logic means and operative upon receipt of the disconnect signal for disconnecting said additional electrical device from said electrical supply bus.

4,317,178
MULTIPLE VELOCITY TRAVERSE FLOW RATE MEASURING TECHNIQUE

Victor P. Head, Hatboro, Pa., assignor to Fischer & Porter Company, Warminster, Pa.

Filed Mar. 1, 1979, Ser. No. 16,486
Int. Cl.³ G01F 1/00
U.S. Cl. 364—510 **11 Claims**



1. A system for measuring volumetric flowrate through a stream cross section of known shape and Area A comprising:

(a) means for measuring line-average velocity u_i on a plurality of n chords traversing said cross section so as to partition said area into predetermined fractional areas a_i; said chords being positioned so as to partition said Area A into said predetermined fractional areas a_i as measured within said cross section between a reference line bisecting the Area A and each of said chords, the predetermined fractional areas being chosen to be predetermined fractions x_i of the semi-areas A/2; said predetermined area fractions x_i and weight factors w_i being chosen to be equal to the abscissas x_i and weight factors w_i of one of the following methods of numerical integration:

(i) Gaussian Integration
(ii) Chebyshev Integration
(iii) Lobatto Integration

(b) data processing means coupled to said measuring means and yielding volumetric flowrate Q according to the computation

$$Q = (A/2) \sum_{i=1}^{n} \bar{u}_i w_i$$

4,317,179
METHOD AND APPARATUS FOR PROCESSING A RADIOGRAPHIC IMAGE

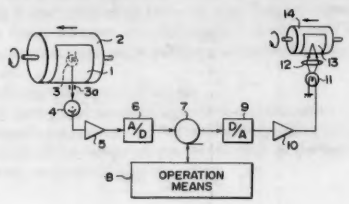
Hisatoyc Kato; Masamitsu Ishida, and Seiji Matsumoto, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Tokyo, Japan

Filed Dec. 26, 1979, Ser. No. 106,734
Claims priority, application Japan, Dec. 26, 1978, 53-163575; Jul. 11, 1979, 54-87794; Nov. 22, 1979, 54-151395; Nov. 22, 1979, 54-151397; Nov. 22, 1979, 54-151399; Nov. 22, 1979, 54-151401
Int. Cl.³ H04N 1/40
U.S. Cl. 364—515 **16 Claims**

1. A method of copying a radiographic image in a radiographic image copying system comprising the steps of: scanning an original radiograph with a light beam; reading out and converting radiographic image information recorded on said original radiograph into an original image density; processing said original image density to produce an output density in accordance with

$$D' = Dorg + \beta(Dorg - Dus)$$

where Dorg is said original image density, β is an emphasis coefficient, Dus is an unsharp mask density corresponding to a predetermined super-low spatial frequency at every scanning point, and D' is said output density whereby a frequency component above said predetermined super-low spatial frequency

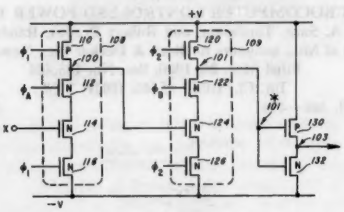


is emphasized; and displaying a visual image in response to said output density.

4,317,180
CLOCKED LOGIC LOW POWER STANDBY MODE

Kenneth A. Lies, Lubbock, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 26, 1979, Ser. No. 106,429
Int. Cl.³ G06F 1/04
U.S. Cl. 364—707 **9 Claims**



1. An electronic data processing system having an ON mode and an OFF mode comprising:

a state controller means including means for generating a clock output in an active cycling state when said electronic data processing system is in said ON mode, means for generating said clock output in an inactive predetermined steady state when said electronic data processing system is in said OFF mode, and means for generating a preset signal at a predetermined voltage when said electronic data processing system is in said OFF mode; and

a plurality of circuit means, each coupled to said state controller means and each having an output terminal, each of said circuit means responsive to said active cycling state of said clock output for performing data processing functions in an active power mode, responsive to said steady state of said clock output for operating in a low power standby mode, and responsive to said predetermined voltage of said preset signal for generating a predetermined voltage at said output terminal.

4,317,181
FOUR MODE MICROCOMPUTER POWER SAVE OPERATION

Jeffrey R. Teza, Houston, and Kenneth A. Lies, Lubbock, both of Tex., assignors to Texas Instruments Incorporated, Dalias, Tex.

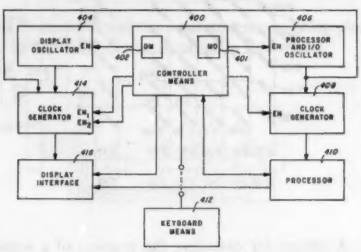
Filed Dec. 26, 1979, Ser. No. 106,809
Int. Cl.³ G06F 1/04
U.S. Cl. 364—707 **6 Claims**

1. An electronic data processing system comprising:

(a) operator input means having means for generating an ON signal, an OFF signal and a plurality of operation signals; and

(b) electronic circuit means having first and second oscillator means and first and second sets of data processing operational circuits for performing data processing operations in accordance with said operation signals and for generating mode signals including:

(i) first clock pulse generator means controlled by said first oscillator means, responsive to predetermined signals from said operator input means and to first predetermined mode signals from other portions of said electronic circuit means selectively to operate in a standby, low power consumption mode, or to operate in an



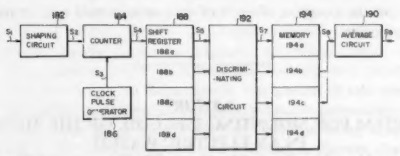
active mode to supply first clock pulses to control operation of said first set of data processing operational circuits; and

(ii) second clock pulse generator means controlled by said second oscillator means, responsive to predetermined signals from said operator input means and to second predetermined mode signals from other portions of said electronic circuit means selectively to operate in a standby, low power consumption mode or to operate in an active mode to supply second clock pulses to control operation of said second set of data processing operational circuits.

4,317,182
SIGNAL AVERAGING DEVICE

Sadao Takase, Yokohama, and Takeshi Fujishiro, Yokosuka, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 29, 1980, Ser. No. 125,791
Claims priority, application Japan, Mar. 1, 1979, 54-22565
Int. Cl.³ G06F *7/38, 15/20*
U.S. Cl. 364—734 **13 Claims**



1. In a control system for an internal combustion engine, the combination comprising:

(a) a central processing unit for controlling various operating conditions of said engine; and

(b) input circuit means for receiving sensor output signals indicative of various operating parameters of said engine, processing said signals and passing processed output signals to said central processing unit, said input circuit means comprising:

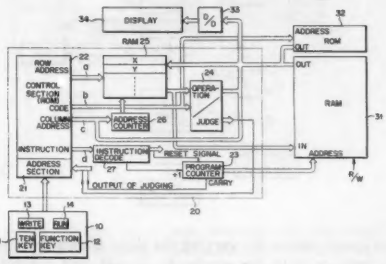
(i) means for storing a predetermined number of sequential values of one of said sensor output signals; and

(ii) means for averaging selected ones of said sequential values and passing an averaged value to said central processing unit as one of said processed output signals.

4,317,183
UNUSED PROGRAM NUMBER INDICATING SYSTEM FOR A SMALL PROGRAM TYPE ELECTRONIC CALCULATOR

Tomohiro Shimizu, Fussa, and Yoshinobu Muranaga, Higashikurume, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Dec. 11, 1979, Ser. No. 102,387
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—900 **4 Claims**



1. An unused program number-indicating system for a small program-type electric calculator comprising:

a keyboard including a plural number of specific keys other than numeral keys or functional keys;

display means for displaying information which is inputted by key operation of said keyboard and results thereby;

a program storing means for storing a prescribed plural pair of program information including program numbers, as program labels, of said inputted information;

a non-variable data storing means for storing all program numbers which correspond to the program number of a plural pair of program information;

a detection means coupled to said program storing means for detecting program numbers of program information which is stored in said program storing means by keyboard operation;

a used program comparing means coupled to said detection means for comparing program numbers which are detected by said detection means with all program numbers which correspond to the number of a plural pair of program information stored in said non-variable data storing means; and

a display control means coupled to said display means for displaying, in prescribed form, all used or unused program numbers on said displaying means according to results of said comparing means and for indicating program numbers which an operator can use.

4,317,184
DUAL SLOPE COMPENSATION APPARATUS

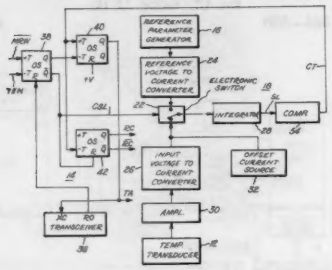
Nicholas G. Leszczynski, Tonawanda, N.Y., assignor to NP Industries, Inc., Tonawanda, N.Y.

Filed Oct. 23, 1980, Ser. No. 199,869
Int. Cl.³ G01S *15/02*
U.S. Cl. 367—13 **15 Claims**

1. For use in apparatus dependent upon the transmission of signals through a medium, compensation apparatus which comprises means responsive to a function affecting said transmission for generating a first output corresponding thereto, means for generating a compensating signal having dual adjacent slope portions, the slope of one of said portions depending upon said first output and the slope of the other of said portions being constant, means responsive to said signal for timing the occurrence of said slope portions, and means for compensating said signals in accordance with the duration of said dual slope compensating signal.

13. Echo sounding distance measuring apparatus comprising

means for transmitting in successive cycles sonic signals and receiving actual return signals after a time interval corresponding to the distance being measured, means responsive to the velocity of propagation of sound for providing a first control signal having an amplitude proportional thereto, means for generating a ramp signal having first and second portions of variable and constant slope which vary in amplitude in opposite senses, means for varying the slope of said first portion in accordance with the amplitude of said first control signal, means responsive to said actual return signals for initiating said second portion of said ramp signal, and means for deriving from said second portion of said ramp signal a compensated return signal with the time interval between said actual return signals and said compensated return signals being proportional to the velocity of sound.

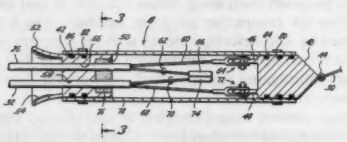


4,317,185

STREAMER CABLE TOWING LINK

Ben B. Thigpen, Houston, and Richard Schiffman, Friendswood, both of Tex., assignors to Western Geophysical Co. of America, Houston, Tex.

Filed Jun. 6, 1980, Ser. No. 156,968
Int. Cl.³ G01V *1/38*
U.S. Cl. 367—15 **5 Claims**



1. A towing link for a seismic streamer cable coupled to a terminator link, there being contained in said streamer cable a plurality of seismic sensors, a plurality of electrical conductors for transmitting signals from said sensors and at least one stress member, comprising:

a headpiece for connection to a tow line including lugs;

a tailpiece defining two bores, spaced apart from said headpiece;

a slack-line lead-in cable including a plurality of electrical conductors and a stress member;

means for sealingly anchoring the conductors and stress member of the terminator link through one of the bores of said tailpiece and means for sealingly anchoring an end of the lead-in cable through the other bore;

means for releasably securing the stress members of said terminator link and of said lead-in cable to the lugs of said headpiece;

means, positioned between said head and tailpieces, for releasably connecting the conductors of the terminator link with corresponding conductors of the lead-in cable; and

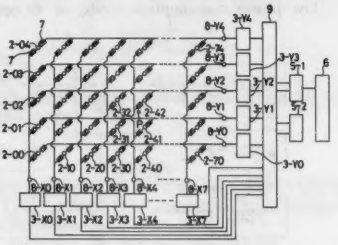
means for watertightly enclosing said connecting means.

4,317,186

DEVICE FOR DETERMINING THE POSITION OF A SOUND SOURCE

Isao Nishi, Osaka, and Hiroyasu Nakasa, Tokyo, both of Japan, assignors to Nihon Etl Kabushiki Kaisha, Osaka, Japan

Filed Nov. 28, 1979, Ser. No. 97,916
Claims priority, application Japan, Dec. 23, 1978, 53-159459
Int. Cl.³ G01S *7/52*
U.S. Cl. 367—127 **5 Claims**



1. A device for detecting the position of a sound source comprising a plurality of sensors disposed on an object for which a source of sound is to be determined, a signal processing circuit which amplifies and carries out a designated output waveform generation process on detected signals produced by said sensors, and a means for identifying the order of detection by each sensor on the basis of the phase differences of said output waveform, said device being characterized in that:

said plurality of sensors are organized in the form of a matrix with N rows and M columns, all of said sensors in a given row being connected in parallel to a corresponding common terminal through respective uni-directional transmission elements, and all of said sensors in a given column being connected in parallel to a corresponding common terminal through respective uni-directional transmission elements;

said device further comprises a means for detecting among the outputs signals from said common terminal for each row and each column a signal with identical phase and a means for identifying the common terminal from which said identical phase signal was transmitted; and

said device is capable of identifying a sensor which produces said detected signal from identification of the row and column which transmits said detected signal with identical phase;

whereby the position of said sound source may be determined from the position of each of said sensors and said order of detection.

4,317,187

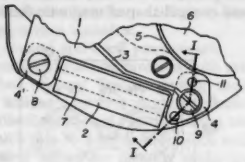
SYSTEM FOR MOUNTING THE COIL OF THE MOTOR IN AN ELECTRIC WATCH

Daniel Huot-Marchand, Montferrand le Chateau, and Fernand Zangiacomi, Besancon, both of France, assignors to France Ebauches S.A., France

Filed Mar. 10, 1980, Ser. No. 128,391
Claims priority, application France, Mar. 9, 1979, 79 06309
Int. Cl.³ G04C *23/02*
U.S. Cl. 368—88 **7 Claims**

1. A system for mounting the coil of the motor in an electric watch wherein the electric watch includes an electric motor for driving the watch, the motor includes a coil on a core and the core has pole pieces, a support for the coil, the support having a respective recess defined therein for a respective extrusion of a pole piece, at least one of the pole pieces of the coil has at least one extrusion which protrudes with respect to the plane of said piece, and the extrusion is of a shape and of

dimensions complementary with respect to those of the respective corresponding recess in the support on which the coil is



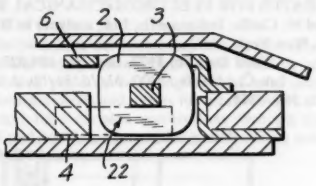
intended to be mounted and the respective recess being placed such that the extrusion can be received in that recess.

4,317,188

MAGNETIC SHIELDING PLATE FOR A STEP MOTOR IN AN ELECTRONIC WRISTWATCH

Kenichi Ushikoshi, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Continuation of Ser. No. 878,836, Feb. 17, 1978, abandoned. This application Jun. 16, 1980, Ser. No. 159,536
Claims priority, application Japan, Feb. 17, 1977, 52-16486
Int. Cl.[3] G04B *37/00*; H02K *1/12*
U.S. Cl. 368—293 **7 Claims**



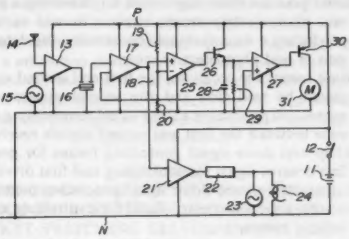
1. In an electronic wristwatch including a step motor for receiving timekeeping signals and converting same into an incremental rotary motion, the improvement comprising a permanent magnet rotor, a magnetic permeable stator surrounding said rotor for incrementally rotating said rotor in response to changes in the magnetic orientation of said stator, and coil means including an elongated magnetic permeable coil core and a coil wrapped therearound, said coil being adapted to receive timekeeping signals and in response thereto change the magnetic orientation of said stator, and magnetic shield means extending the lengthwise extent of the coil, said shield means including a shield plate having an opening therein for permitting said coil to be disposed in the opening of said plate to thereby surround said coil and having minimum cross-sectional area transverse to the lengthwise extent of said magnetic permeable core, the ratio of said minimum cross-sectional area of the shielding plate in a direction transverse to the lengthwise extent of the coil core to the minimum cross-sectional area of the coil core taken transverse to the lengthwise extent of the coil core, is at least one and no greater than five to thereby provide a reduced dimensional shielding plate and hence a reduction in the thickness of the timepiece.

4,317,189

VOICE FREQUENCY SIGNAL ACTUATED TAPE RECORDER

Norio Fukuoka, Hachioji, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Dec. 10, 1979, Ser. No. 101,650
Claims priority, application Japan, Dec. 13, 1978, 53-154756
Int. Cl.[3] G11B *31/00*
U.S. Cl. 369—7 **4 Claims**



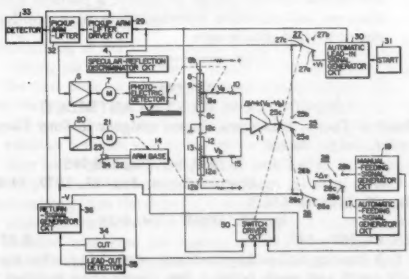
1. A starting device for a tape recorder by voice signal comprising an FM receiver section having an FM detector means coupled to the detector for detecting a modulated voice signal, a reference voltage source, a first comparator for generating an output signal by comparing the output FM signal of the FM receiver with a reference voltage preset by the reference voltage source, a switching element controlled and actuated by the output signal of the first comparator, a charging and discharging circuit connected to the element for holding the output signal of the first comparator for a predetermined time after termination of the voice signal, a second comparator connected to receive the terminal voltage of the charging and discharging circuit for controlling a motor, said reference voltage source being connected for supplying the preset reference voltage to the first and the second comparators.

4,317,190

PICKUP ARM MOVEMENT CONTROL SYSTEM FOR RECORD PLAYER

Motoi Iyeta, Hamakita, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Nov. 23, 1979, Ser. No. 96,668
Claims priority, application Japan, Nov. 28, 1978, 53-146803
Int. Cl.[3] G11B *17/06*
U.S. Cl. 369—33 **10 Claims**



1. A system for controlling the movement of a pickup arm of a record player in a plane parallel a surface of a turntable on said record player, which comprises, in combination:

first driving means for driving said pickup arm in a predetermined course of movement relative to a turntable of said record player;

photoelectric means for optically detecting unmodulated spaces of a surface of a record disk placed on said turntable;

second driving means for driving said photoelectric means in another predetermined course of movement relative to said turntable;

first position detecting means for detecting a position of said pickup arm relative to said turntable and producing a first signal representing the detected relative position of said pickup arm;

second position detecting means for detecting a position of said photoelectric means relative to said turntable and producing a second signal representing the detected position of said photoelectric means;

circuit means for receiving the first and second signals produced by said first and the second position detecting means and producing a third signal representing the difference between the first and second signals received;

pickup arm drive signal generating means for generating a first control signal for controlling said first driving means;

photoelectric means drive signal generating means for generating a second control signal for controlling said second driving means;

first switching means for supplying the third signal produced by said circuit means to selected one of said first and second driving means;

second switching means for selectively applying said first control signal from said pickup arm drive signal generating means to said first driving means;

third switching means for selectively applying said second control signal from said photoelectric means drive signal generating means to said second driving means; and

switching means driver for controlling said first, second and third switching means, said switching means driver being operative so that:

in a first state, said first switching means is controlled to supply said third signal to said first driving means, said second switching means is controlled to not supply said first control signal to said first driving means, and said third switching means is controlled to supply said second control signal to said second driving means, wherein movement of said pickup arm is controlled by said first driving means to assume a position with respect to said turntable corresponding to a position assumed by said photoelectric means; and

in a second state, said first switching means is controlled to supply said third signal to said second driving means, said second switching means is controlled to supply said first control signal to said first driving means, and said third switching means is controlled to not supply said second control signal to said second driving means, wherein movement of said photoelectric means is controlled by said second driving means to assume a position with respect to said turntable corresponding to a position assumed by said pickup arm.

4,317,191

MOVING COIL PICKUP CARTRIDGE

Shokichi Tatara, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

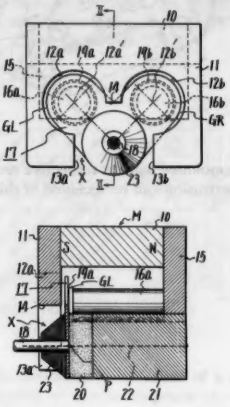
Filed Jan. 7, 1980, Ser. No. 109,995

Claims priority, application Japan, Jan. 17, 1979, 54-4293; May 24, 1979, 54-64179

Int. Cl.³ H04R *9/04, 9/16*

U.S. Cl. 369—147 **8 Claims**

1. A moving coil pickup cartridge comprising, a bar magnet with north and south poles, a first planar yoke member connected to one end of said bar magnet, a second planar yoke member connected to the opposite end of said bar magnet and formed with a pair of spaced openings, a pair of pole pieces of magnetic material attached to said first yoke member and extending toward said second yoke member and terminating adjacent said spaced openings and with at least the ends of said pole pieces generally rounded adjacent said openings so that a conical shaped magnetic field exists between the ends of said pole pieces and said second planar yoke, an L-shaped coil base plate with a pair of arms extending into the air gaps between the ends of said pole pieces and openings in said second yoke to intercept said conical-shaped magnetic fields, a pickup pair



of coils attached to arms and mounted in said conical-shaped magnetic fields, a damper means in engagement with said L-shaped plate at the junction of said legs, means flexibly attaching said L-shaped plate to said damper means and a cantilever for supporting stylus attached to said L-shaped plate at the junction of said legs.

4,317,192

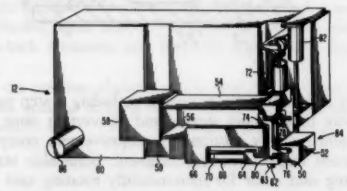
HEAD SUSPENSION VELOCITY CONTROL APPARATUS FOR ELECTROMECHANICAL RECORDER

Richard M. Castle, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 26, 1979, Ser. No. 106,523

Int. Cl.³ G11B *17/00, 21/16, 11/00, 3/00*

U.S. Cl. 369—244 **3 Claims**



1. In an apparatus for electromechanically recording information signals in a substrate, the apparatus comprising:

a platform for supporting said substrate;

a first means for mounting having a first projection;

means for cutting undulations representative of information signals in a surface of said substrate; said cutting means being attached to said first mounting means;

means for supporting said cutting means such that said cutting means cuts into said substrate surface to a given nominal depth; said supporting means being attached to said first mounting means;

a second means for mounting;

resilient means for coupling said first mounting means to said second mounting means;

means for raising said first mounting means to a given position such that said cutting means and said supporting

means are retracted out of contact with said surface of said substrate supported on said platform; and

means, attached to said second mounting means, for regulating the rate at which said first mounting means descends to said substrate surface from said given position;

said regulating means includes:

a pin having second and third projections;

said second projection in combination with said first projection attached to said first mounting means providing means for linking said first mounting means to said pin during the descent of said first mounting means;

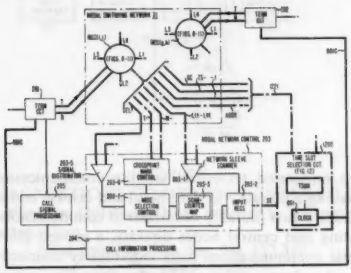
said third projection in combination with said first projection providing means for priming said regulating means when said first mounting means is returned to said given position.

4,317,193

TIME DIVISION NODAL SWITCHING NETWORK

Amos E. Joel, Jr., South Orange, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 4, 1980, Ser. No. 117,830
Int. Cl.³ H04Q *11/04*
U.S. Cl. 370—54 **11 Claims**



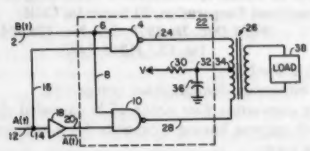
10. A nodal switching network comprising a plurality of link paths and nodal crosspoint configurations operable to interconnect said link paths, terminating circuits associated with said nodal configurations and means for establishing a plurality of independent time division connections through the least busy ones of said nodal configurations to link calling and called ones of said terminating circuits.

4,317,194

CARRIER FREQUENCY SPECTRUM GENERATOR USING LOGIC LEVEL INPUT PULSES

Lawrence E. Getgen, Redwood City, Calif., assignor to GTE Automatic Electric Laboratories, Inc., Northlake, Ill.

Filed Dec. 3, 1979, Ser. No. 99,379
Int. Cl.³ H04J *1/06*
U.S. Cl. 370—121 **6 Claims**



1. Apparatus for deriving a plurality of carrier frequencies that are spaced from a first predetermined frequency by an amount equal to the fundamental frequency of a second predetermined frequency, and multiples thereof, which comprises:

means for producing true and complementary logic level signals from said first predetermined frequency and making said true and complementary signals available, respectively, at first and second output terminals, said producing means having an input terminal adapted to receive said first predetermined frequency;

switching means for alternately connecting the second predetermined frequency between third and fourth output terminals at a rate equal to the first predetermined frequency, said switching means having first and second input terminals adapted for connection to said first and second output terminals, respectively, of said producing means, and having a third input terminal adapted to receive the second predetermined frequency; and

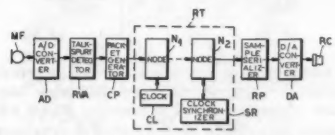
coupling means for interconnecting said switching means with a utilization device, said coupling means having first and second input terminals connected to the third and fourth output terminals, respectively, of said switching means, and having first and second output terminals.

4,317,195

METHOD OF AND DEVICE FOR REDUCING SPEECH-REPRODUCTION IRREGULARITIES IN PACKET-SWITCHING TELECOMMUNICATION SYSTEMS

Giulio Barberis, and Daniele Pazzaglia, both of Turin, Italy, assignors to CSELT-Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Mar. 26, 1980, Ser. No. 134,269
Claims priority, application Italy, Mar. 27, 1979, 67628 A/79
Int. Cl.³ H04J *6/02*
U.S. Cl. 370—94 **8 Claims**



1. A method of minimizing irregularities in the transmission of speech signals by packets of digitally coded voice samples originating at a first node and arriving at a second node of a routing network in a telecommunication system in which periods of coherent speech are translated into respective sequences of packets labeled with identification codes under the control of a transmission clock at the first node and are arrayed into an outgoing queue at the second node under the control of a reception clock independent of said transmission clock but operating at substantially the same rate, said packets of identical length and being subjected to variable delays in traveling from said first node to said second node,

comprising the steps of:

determining at the second node, from labels carried by incoming packets, the time of departure of each packet from the first node as measured by said transmission clock;

correlating the reading of said reception clock with that of said transmission clock at the beginning of voice communication between said nodes on the basis of said departure time and a minimum transit time established by substantially invariable network parameters;

ascertaining from the departure time of an initial packet of a sequence thereafter arriving as part of said voice communication, and from the reading of the arrival time on the reception clock correlated with the transmission clock, an actual delay undergone by said initial packet;

comparing said actual delay with a minimum overall delay obtained by adding a supplemental time lag to said minimum transit time;

storing said initial packet at the second node for a limited time equal to the difference between said minimum overall delay and said actual delay upon the former exceeding the latter;

releasing the initial packet at the end of said limited time to the output queue of the second node; and

passing each subsequent packet of the same sequence to said output queue immediately upon arrival at the second node.

4,317,196

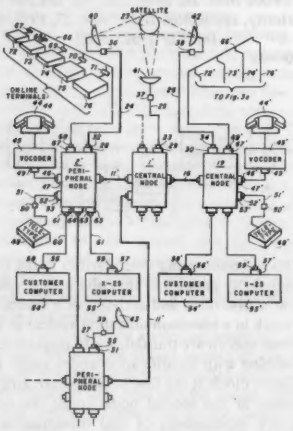
TRANSPARENT INTELLIGENT NETWORK FOR DATA AND VOICE

Mehmet E. Ulug, Ottawa, Canada, assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 912,115, Jun. 2, 1978, abandoned. This application May 15, 1980, Ser. No. 149,826

Int. Cl.³ H04J *6/00*

U.S. Cl. 370—94 **10 Claims**



1. A communications network for data and voice having a first node, a second node, and a transmission link of predetermined channel capacity interconnecting said first node and said second node, said first node having a first plurality of customers connected thereto, said second node having a second plurality of customers connected thereto, a buffer in said first node to accept electrical signals received from said customers, means in said first node for distinguishing between first electrical signals indicative of the initial activation of customer connections and second electrical signals indicative of data received from said customers, FIFO and SFIFO queueing means in said first node, means responsive to receipt of said first signals for connecting into said SFIFO customers represented by said first electrical signals to serve initially activated customers according to an SFIFO order of priority, means for conditioning said FIFO queue to accept queued signals from said last mentioned customers, means effective upon the occurrence of otherwise unused channel capacity for accepting said queued signals from said FIFO to fill said channel capacity, and clocking means effective upon the expiration of a predetermined interval after acceptance of said queued signals by said FIFO queue to transmit said queued signals through the channel.

4,317,197

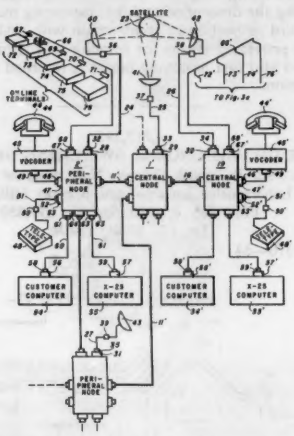
TRANSPARENT INTELLIGENT NETWORK FOR DATA AND VOICE

Mehmet E. Ulug, Ottawa, Canada, assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 912,117, Jun. 2, 1978, abandoned. This application May 15, 1980, Ser. No. 150,263

Int. Cl.³ H04J *6/00*

U.S. Cl. 370—94 **17 Claims**



1. An integrated terrestrial/satellite communications network having a plurality of peripheral and central communications nodes, a first plurality of terrestrial communications links connecting said central nodes directly, a second plurality of terrestrial communications links individually connecting said peripheral nodes to said central nodes, a satellite, means establishing communications links via said satellite directly between each of said central nodes, means for inputting data from a plurality of customers into said network at one node and outputting said data from said network through at least one other node, means in said one node for identifying the location within said network of said at least one other node and for repetitively developing discrete groups of impulses, each group having interleaved data from a plurality of customers, and reservation means effective when said at least one other node is connected terrestrially to said one node through at least one intervening node for checking availability of communication capacity therebetween before transmitting said data.

4,317,198

RATE CONVERTING BIT STREAM DEMULTIPLEXER AND MULTIPLEXER

Raymond E. Johnson, Richardson, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 26, 1979, Ser. No. 106,564

Int. Cl.³ H04J *3/02*

U.S. Cl. 370—112 **2 Claims**

1. A bit stream demultiplexer comprising:

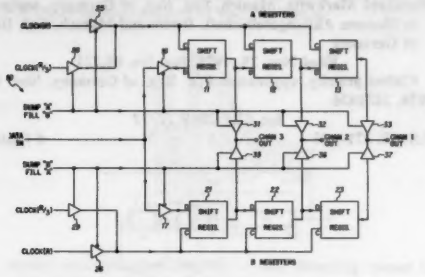
a rate converting first group of N cascaded shift registers, each register having a capacity for a segment of data M bits long;

a second group of N cascaded shift registers, each having a capacity for a segment of data M bits long;

means for serially entering, at a bit rate R, a first bit stream portion of N of said data segments, at an input of an initial register in said first group;

means for serially entering, at a bit rate R, a second bit stream portion of N data segments at an input of an initial register in said second group; and

means for serially reading M bits from each shift register in said first group at a rate of R/N, the reading from each



register beginning upon the initiation of said entering of the second bit stream portion in said second group.

4,317,199

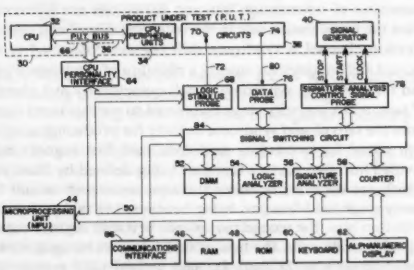
DIAGNOSTIC EXTENDER TEST APPARATUS

Alan K. Winslow, Hillsboro, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Jan. 31, 1980, Ser. No. 117,327

Int. Cl.³ G06F *11/22*

U.S. Cl. 371—16 **7 Claims**



1. A diagnostic extender test apparatus for use with a product under test (PUT) having a central processing system which includes stored diagnostic instructions and is capable of generating logic stimulus signals, comprising:

a communication port for interconnecting said test apparatus with the central processing system of said PUT;

means coupled to said communication port for receiving logic stimulus signals from said central processing system and applying said logic stimulus signals to predetermined signal injection points within the PUT;

analog and digital test and measurement means coupled to said communication port for receiving signals from selected test points within the PUT and producing test and measurement results in response thereto, said results being returned through said communcation port to said central processing system.

4,317,200

METHOD AND DEVICE FOR TESTING A SEQUENTIAL CIRCUIT DIVIDED INTO A PLURALITY OF PARTITIONS

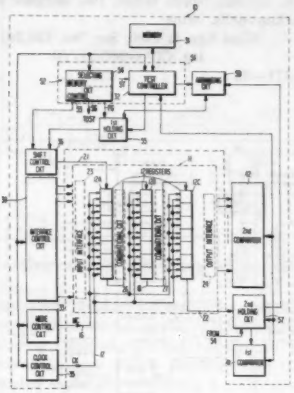
Nobuo Wakatsuki, and Osamu Itoh, both of Tokyo, Japan, assignors to VLSI Technology Research Association, Kawasaki, Japan

Filed Oct. 19, 1979, Ser. No. 86,613

Claims priority, application Japan, Oct. 20, 1978, 53-128538; Oct. 24, 1978, 53-129982

Int. Cl.³ G06F *11/26*

U.S. Cl. 371—25 **4 Claims**



1. A method of testing a sequential circuit to detect a fault therein, said sequential circuit comprising a multiplicity of registers for storing information units, respectively, said registers being operable as normal registers in a normal mode and as a shift register with said registers connected in cascade in a shift mode, said sequential circuit being divisible into a succession of partitions each of which comprises a first and a second sequence of the registers of a first and a second predetermined number of registers, respectively, said method comprising the steps of:

preparing test patterns, predetermined for the respective partitions, and reference patterns for the respective test patterns, said test patterns each having a data length equal to the first predetermined number of registers in its respective partition, said reference patterns each having a data length equal to the second predetermined number of registers in its respective partition, each of said reference patterns checking said second sequence of said each partition;

allotting serial addresses to the respective registers connected in cascade;

deriving a first and a second address from said serial addresses, said first and said second addresses being the addresses allotted to the leading ones of the registers of the first and second sequences in each partition, one partition after another in said succession of partitions;

selecting one of said test patterns that is predetermined for said each partition;

imparting, in said shift mode, said one test pattern to the respective registers of the first sequence of said each partition as the information units for said registers with reference to said first address;

making, in said normal mode, the registers of the second sequence in said each partition hold a set of status data, resulting from said one test pattern, as the information units stored in the registers of the second sequence in said each partition, said status data set having a data length equal to the second predetermined number of registers in said each partition;

deriving said status data set in said shift mode from the registers of the second sequence in said each partition;

selecting one of said reference patterns prepared for said one test pattern; and

comparing said status data set with the selected reference pattern to detect said fault when said status data is non-coincident with said reference pattern.

4,317,201

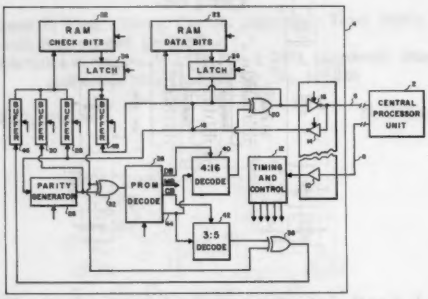
ERROR DETECTING AND CORRECTING RAM ASSEMBLY

Patrick A. Sedalis, North Wales, Pa., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed Apr. 1, 1980, Ser. No. 136,262

Int. Cl.³ G06F *11/10*

U.S. Cl. 371—38 **7 Claims**



1. A memory assembly for a computer comprising:

first memory means into which digital data words may be written for storage and from which digital data words may be read;

check bit generating means connected to be responsive to said digital data words to produce a check bit code word corresponding to the content of each of said data words;

second memory means into which said check bit code words may be written for storage and from which said check bit code words may be read, said check bit code word being generated by said generating means and written into said second memory means in response to and corresponding to digital data words being written into said first memory means;

first means for reading a digital data word from said first memory means;

said generating means being further connected to said first reading means for generating a further check bit code word in response to and corresponding to a digital data word read from said first memory means,

second means for reading a check bit code word from said second memory means in response to and corresponding to a digital data word read from said first memory means,

comparator means for comparing said check bit code word read from said second memory means with said further check bit code word to detect a difference therebetween as an indication of an error in the storage of said words,

decoder means connected to be responsive to a detected difference output from said comparator means to produce a correction signal;

correction means connected to be responsive to said correction signal to correct said words read out of said memory means, and

means connected to said correction means to rewrite the corrected words into said memory means.

4,317,202

CIRCUIT ARRANGEMENT FOR CORRECTION OF DATA

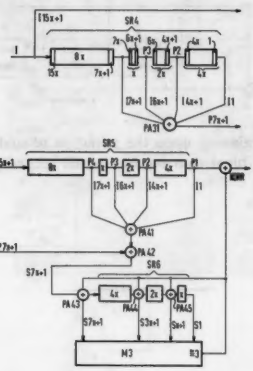
Wernhard Markwitz, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Nov. 19, 1979, Ser. No. 95,221

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1978, 2851436

Int. Cl.³ G06F *11/12*

U.S. Cl. 371—43 **6 Claims**



1. A circuit for correcting x bits of data transmitted in a communication channel comprising, in combination, a first shift register located at the transmission side of said communication channel, said first shift register having a plurality of taps, a first parity stage having inputs connected to said taps for producing parity bits coded according to a recurrent code, a second shift register located at the receiving side of said communication channel, a second parity stage connected to receive signals from the taps of said second shift register whereby sequences of information bits and parity bits are transmitted from the transmission side to the receiving side of said communication channel, a syndrome shift register connected to said second shift register for storing a plurality of syndrome signals and for providing syndrome signals coincidently at a plurality of taps, and a majority stage connected to receive input signals from the taps of said syndrome register for producing a correction signal for correcting said data, said first register being divided into two parts, a first part being defined by those cells which are disposed between the taps connected to said first parity stage, said first part being connected to said parity stage with four taps, the second part of said first shift register consisting of least **8x** cells, the taps of said first part being spaced by approximately x, **2x**, and **4x**, said second shift register also being divided into two parts each identical to said first shift register, said syndrome register consisting of at least **7x** cells whose taps are disposed at the same intervals as in the first part of said first shift register, the taps being arranged in the inverted mirror image of said first shift register with respect to the transfer direction.

4,317,203

COLLATOR ERROR RECOVERY

Anthony J. Botte; James H. Hubbard, both of Boulder; Wayne E. Robbins, Longmont, all of Colo., and Paul R. Spivey, Clark County, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 19, 1979, Ser. No. 77,064

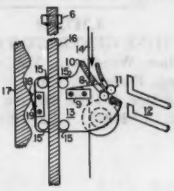
Int. Cl.³ G06F *11/00*; B65H *29/60*

U.S. Cl. 371—60 **9 Claims**

1. In sheet collator apparatus having a plurality of bin means

for receiving sheets and directing means for directing a sheet into one of said bin means, the improvement comprising:

first switch means for supplying a first signal indicating that a sheet has entered one of said bin means;



second switch means coupled to said directing means for supplying a second signal indicating that said directing means is operably disposed at one of said bin means; and

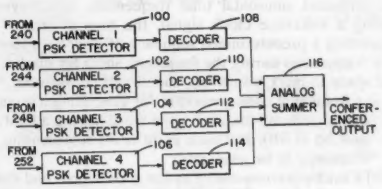
detector means responsive to said first and second signals for detecting an error in the operation sequence of said sheet collator apparatus.

4,317,204

SPREAD SPECTRUM CONFERENCING COMMUNICATION SYSTEM

Robert S. Gordy, Largo; David E. Sanders, St. Petersburg, and Ramon P. Chambers, Clearwater, all of Fla., assignors to NCR Corporation, Dayton, Ohio

Filed Jun. 4, 1976, Ser. No. 693,036
Int. Cl.³ H04B *1/10*
U.S. Cl. 375—1 **15 Claims**



1. A multiple subscriber random access spread spectrum conferencing communication system comprising:

means for receiving spread spectrum messages in a plurality of channels;

means for detecting said messages and for generating a first signal in each channel in response thereto;

correlation means associated with each channel for correlating said messages with a pseudonoise sequence and for generating a control signal in response thereto;

multiplexing means for assigning a particular channel to said message when said first signal and said control signal in one channel are time coincident and for locking out said other channels not having said time coincidence from said message; and

means associated with each of said channels for decoding said message.

4,317,205

WIDEBAND TRANSCEIVER WITH EMI SUPPRESSION

Tat C. Lam, Fremont, Calif., assignor to TCL, Inc., Santa Clara, Calif.

Filed Jun. 13, 1980, Ser. No. 159,364
Int. Cl.³ H04B *1/38*
U.S. Cl. 375—7 **7 Claims**

1. A data communication transceiver for transmitting signals to a communicating medium and receiving signals therefrom which are generated by another transceiver, the transceiver comprising

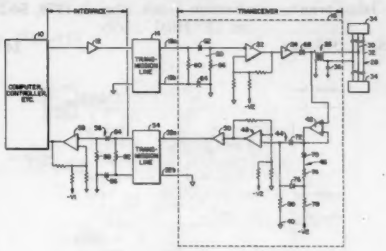
an input terminal,

first short time constant differentiation means connected to the input terminal to differentiate signals applied thereto and produce a first differentiated output signal,

Schmitt trigger means supplied with the differentiated output signal for producing a corresponding first square wave output signal,

first driver means supplied with the square wave output for supplying it to the communicating medium,

amplifying means for receiving signals from the communi-



cating medium and for producing an amplified output therefrom,

second short time constant differentiation means supplied with the amplified output signal for differentiating it and for producing a second differentiated signal,

second Schmitt trigger means supplied with the second differentiated signal for producing a corresponding second squarewave signal,

an output terminal, and

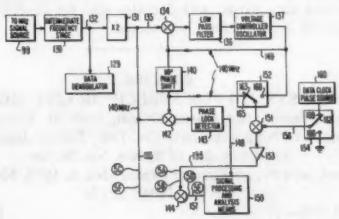
second driver means supplied with the second squarewave signal for supplying it to the output terminal.

4,317,206

ON LINE QUALITY MONITORING

Edward J. Nossen, Cherry Hill, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 12, 1980, Ser. No. 148,994
Int. Cl.³ H03K *13/32*; H04Q *1/20*
U.S. Cl. 375—10 **9 Claims**



3. A system for on-line detection of distortion in a received digital signal which is phase modulated at a data rate f_d and which has a suppressed carrier signal of frequency f_c, without interrupting the signal, and comprising:

first means for multiplying the digital signal by itself N times to produce a first signal comprising a reconstructed carrier signal of frequency Nf_c and phase ϕ_1 and distortion produced upper and lower sidebands;

second means for generating a second signal of frequency Nf_c;

means for generating a clock signal of frequency f_d;

control means for mixing said second signal with said clock signal to produce a third signal;

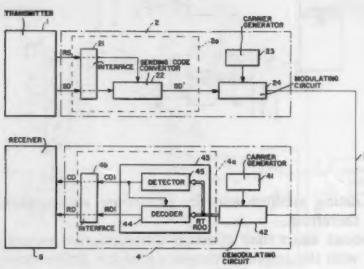
said control means further constructed to mix said second

signal and said third signal with said first signal to produce d.c. voltages defining said distortion.

4,317,207
DATA TRANSMISSION SYSTEM

Noriaki Fujimura, Tokyo; Tsuneo Kinoshita, Inagi; Tadashi Aono, Kawasaki; Takashi Kaku, Kawasaki, and Yasuya Tanaka, Kawasaki, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, and Fujitsu Limited, both of Japan

Filed Mar. 3, 1980, Ser. No. 126,527
Claims priority, application Japan, Mar. 2, 1979, 54-24257
Int. Cl.³ H04L *27/49*
U.S. Cl. 375—19 **14 Claims**



1. A data transmission system comprising:

a transmitter for generating a carrier signal and for generating a modulated carrier signal wherein said carrier signal is modulated in accordance with a sending data signal during a communication period;

a transmission line, coupled to said transmitter, for providing said modulated carrier signal;

a receiver, coupled to the transmission line, for demodulating said modulated carrier signal to provide a receiving data signal;

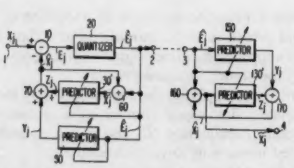
said transmitter inverts specified bits of said sending data in accordance with a sending request signal and modulates the carrier signal with the sending data signal including the bit inverted data;

said receiver regenerates the data in the sending data signal including said bit inverted data, detects that said bit inverted data exists, and decodes said bit inverted data if said bit inverted data is detected.

4,317,208
ADPCM SYSTEM FOR SPEECH OR LIKE SIGNALS

Takashi Araseki, and Kazuo Ochiai, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Sep. 28, 1979, Ser. No. 79,724
Claims priority, application Japan, Oct. 5, 1978, 53-123255
Int. Cl.³ H04L *25/16*
U.S. Cl. 375—27 **12 Claims**



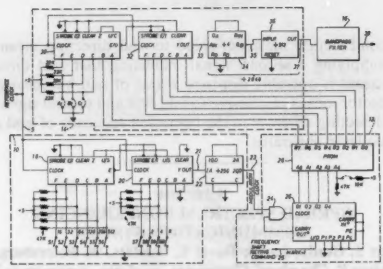
3. A receiver for an ADPCM system including a receive decoder, said receive decoder comprising:

receive prediction means, having no feedback loop, for receiving output signals E_j from a quantizer in a transmitter and for generating therefrom receive predicted values X_j, and an adder receiving as inputs said quantizer output signals and said receive predicted values and combining them to produce a reproduction signal X_j.

4,317,209
FSK TONE GENERATOR CIRCUIT

Julius A. Barthelme, Woodsboro, Md., assignor to Frederick Electronics Corp., Frederick, Md.

Filed Dec. 4, 1979, Ser. No. 100,057
Int. Cl.³ H04L *27/12*; H04J *1/00*
U.S. Cl. 375—62 **28 Claims**



21. A tone generator circuit for use in a frequency shift keying unit in which bits of data are transmitted as a series of marks and spaces, each bit transmitted during a predetermined bit time, and where the marks and spaces are represented by two different sinusoidal tone frequencies, said keying unit having a reference clock signal, the tone generator circuit generating a predetermined sequence of discrete intermediate tone frequencies during the frequency shifts for mark-to-space and space-to-mark transitions, the circuit comprising:

(a) a frequency code generator, for generating a sequence of digital code words, each code word having a least significant bit (LSB), and each code word representing a tone frequency to be generated;

(b) a multiplier responsive to the code words and the reference clock signal, for generating the tone frequencies, said multiplier cooperating with the sequence of code words to generate symmetrical sequences of discrete intermediate tone frequencies in the sequences of the markspace frequency shifts, and where changes in the intermediate frequencies are in increments of frequency with one increment equal in magnitude to the change in tone frequency resulting from a change in only the LSB of a code word; and

(c) a filter, for converting the digital tone frequency signals into sinusoidal tone frequencies.

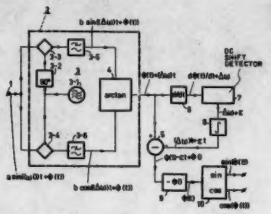
4,317,210
COHERENT RECEIVER FOR ANGLE-MODULATED DATA SIGNALS

Cornelis B. Dekker, Torrance, Calif., and Klaas M. Boschma, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 18, 1980, Ser. No. 141,543
Claims priority, application Netherlands, Feb. 13, 1980, 8000883
Int. Cl.³ H04L *25/10*; H03D *3/20*
U.S. Cl. 375—76 **6 Claims**

1. A receiver for angle-modulated data signals of the type a sin $((\omega)t+\phi(t))$, where ω represents the carrier frequency and $\phi(t)$ the data-dependent angle modulation of the carrier, comprising a demodulation channel having an output for a signal which is a function of the modulation signal $\phi(t)$, the demodulation channel comprising a frequency transposition stage for providing an output signal proportional to sin $((\Delta\omega)t+\phi(t))$

comprising a local carrier oscillator having a frequency which may deviate by an amount ($\Delta\omega$) from the carrier frequency of the angle-modulated signals applied to the demodulation channel, characterized in that the receiver comprises a frequency discriminator for providing, in response to the output signal of the frequency transposition stage, a signal proportional to

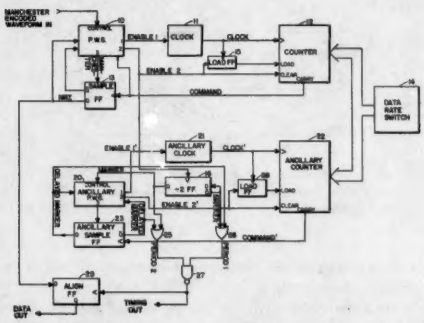


$[d\phi(t)/dt+\Delta\omega]$; a DC-shift detector for providing, in response to the output signal of the frequency discriminator, a signal proportional to $\Delta\omega$ and means for providing, in response to the output signal of the frequency transposition stage and the output signal of DC-shift detector, a signal which is proportional to $\phi(t)$.

4,317,211
MANCHESTER CODE DECODING APPARATUS

Harris A. Quesnell, Jr., San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 2, 1980, Ser. No. 155,281
Int. Cl.³ H03K *13/175*
U.S. Cl. 375—87 **13 Claims**



1. An apparatus for decoding a Manchester encoded waveform containing data and timing components, comprising:

gating means responsive to the encoded waveform and coupled to receive a signal representing data decoded from the encoded waveform for providing, at each mid-cell transition in the encoded waveform, a first enabling signal and a second enabling signal, each enabling signal representing pulse widths contained in the encoded waveform;

means coupled to receive the first enabling signal and responsive thereto for providing a primary clock signal having a frequency exceeding the frequency of the encoded waveform;

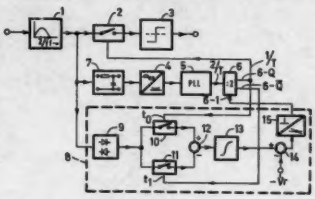
means coupled to the clock means for counting clock oscillations and coupled to receive the second enabling signal and responsive thereto for producing a command signal upon reading a predetermined clock count magnitude;

means coupled to receive the command signal and responsive thereto for sampling the state of the encoded waveform and for storing the sample to provide a signal representing data decoded from the encoded waveform.

4,317,212
ARRANGEMENT FOR CHECKING THE SYNCHRONIZATION OF A RECEIVER

Petrus J. Van Gerwen, and Wilfred A. M. Snijders, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 26, 1980, Ser. No. 134,035
Claims priority, application Netherlands, Apr. 20, 1979, 7903100
Int. Cl.³ H04L *7/06*
U.S. Cl. 375—113 **1 Claim**

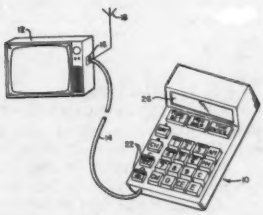


1. An arrangement for checking the synchronization of a receiver for data signals having a spectrum comprising two sidebands located on each side of a symbol frequency, characterized in that said arrangement comprises means for sampling the amplitude of the data signal at two synchronous instants during each symbol interval, said synchronous instants being separated by a half a symbol interval, an integrator, means for applying said sample data, taken at each of said synchronous instants, with opposite polarity, respectively, to said integrator, and means for deriving a check signal from said integrator output indicative of the synchronization of said receiver.

4,317,213
TELEVISION RECEPTION INTERFERING APPARATUS

Mark DiLorenzo, 5812 W. Moreland Cir., Westminster, Calif. 92683

Filed May 9, 1980, Ser. No. 148,113
Int. Cl.³ H04K *3/00*
U.S. Cl. 455—1 **9 Claims**



1. Apparatus for selectively interfering with reception of a radio frequency carrier signal by a receiver during predetermined time periods selectable by a user, each of said time periods commencing at a first predetermined time and terminating at a second predetermined t ..., the receiver being of the type having antenna input terminals for receiving said radio frequency carrier signal, the apparatus comprising:

means coupled to the antenna input terminals for generating a radio frequency signal substantially equal to the radio frequency carrier signal;

means presettable by the user for selecting and providing

preset time information signals indicative of said predetermined time periods; and

means coupled to the generating means and responsive to the preset time information signals for activating the generating means at the first predetermined time and for deactivating the generating means at the second predetermined time;

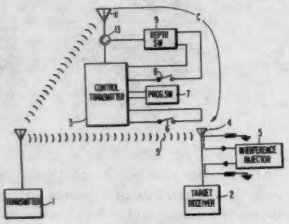
whereby the radio frequency signal provided by the generating means, while the same is activated, causes interference with the reception of the radio frequency carrier signal by the receiver.

4,317,214

APPARATUS FOR SIMULATING INTERFERENCE TRANSMISSIONS

John S. Attinello, 6474 Woodridge Rd., Alexandria, Va. 22312

Filed Jul. 14, 1980, Ser. No. 168,975
Int. Cl.³ H04B *17/00*; H04K *3/00*
U.S. Cl. 455—1 **15 Claims**



1. In a communication system of a type wherein at least one test transmitter emits test communication signals to communicate with at least one target test receiver over a transmission medium and other nontest transmitters emit nontest communication signals to communicate with nontest receivers over said transmission medium, the improvement of an interference simulating system for interfering only with the test communications signals, the interference simulating system comprising:

control means for transmitting control signals that do not interfere with the test and nontest communication signals, the control signals transmitted over said transmission medium to define corresponding interference signals; and

injector means operatively associated with said at least one target test receiver for receiving said control signals and for generating interference signals defined by the control signals and for applying the interference signals to said at least one target test receiver to interfere with at least the test communication signals that are received by the target test receiver.

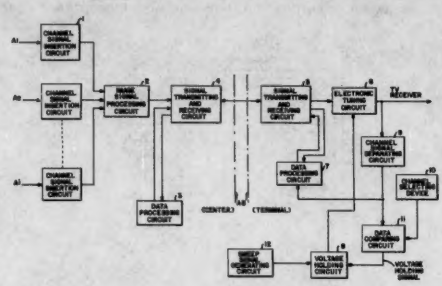
4,317,215

TUNING SYSTEM FOR CATV TERMINAL

Toshio Tabata, and Hiroki Uemura, both of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sep. 11, 1979, Ser. No. 74,486
Claims priority, application Japan, Sep. 13, 1978, 53-112832
Int. Cl.³ H04H *1/04*; H04N *7/10*
U.S. Cl. 455—5 **2 Claims**

1. In a tuning system of a CATV terminal having an electronic tuning converter which in response to a tuning voltage converts a desired channel from TV signals containing separate channel identifying data on each channel and transmitted downstream from a CATV center into a specific channel frequency which is provided as an output, the improvement comprising a channel signal separating circuit connected to receive the output of the converter and extract the channel identifying data contained in a converted channel, a circuit coupled to receive the extracted channel identifying data from the channel signal separating circuit and transmit the channel identifying data to the CATV center, a data comparing circuit connected to compare channel selecting data obtained from a channel selecting device with said extracted channel identifying data and generate a holding signal when said two data coincide, a sweep signal generating circuit for generating a sweep signal in a voltage range capable of selecting all channels of said TV signals, and a voltage holding circuit which, while ordinarily passing said sweep signal therethrough, holds a voltage of said sweep signal in response to the holding signal and supplies said held voltage to said electronic tuning converter as said tuning voltage.

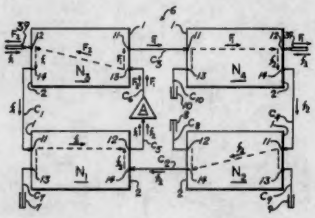


4,317,216

BI-DIRECTIONAL FILTER SYSTEM FOR AMPLIFYING SIGNALS IN SEPARATE FREQUENCY BANDS

Daniel P. Kaegebein, Depew, N.Y., assignor to TX RX Systems, Inc., Angola, N.Y.

Filed May 9, 1980, Ser. No. 148,464
Int. Cl.³ H04B *3/38*
U.S. Cl. 455—16 **15 Claims**



1. A two-way repeater amplifier for amplifying one or more signals of a first group propagating in a first direction and one or more signals of a second group propagating in the opposite direction, said signal groups each falling within a mutually exclusive first or second frequency band, said repeater amplifier including:

a. an amplifier for amplifying both said first and second groups of signals;

b. first and second filter networks disposed to feed signals to the input of said amplifier, said first network adapted to pass signals within said first band and said second network adapted to pass signals within said second band;

c. third and fourth filter networks disposed to receive signal from the output of said amplifier, said third network adapted to pass signals within said second band and said network adapted to pass signals within said first band; said repeater amplifier characterized by:

d. means for routing said first signals through said first network, said amplifier and said fourth network, and for routing said second signals through said second network, said amplifier and said third network, said routing means including a plurality of tuned cables cooperating with said networks to pass said first signals through said first and

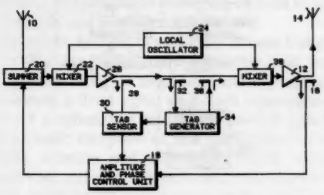
fourth networks, to pass said second signals through said second and third networks, to block said first signals from passing through said second and third networks, and to block said second signals from passing through said first and fourth networks.

4,317,217

TAG GENERATOR FOR A SAME-FREQUENCY REPEATER

Allen L. Davidson, Crystal Lake, and Jona Cohn, Morton Grove, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 11, 1980, Ser. No. 176,895
Int. Cl.³ H04B 7/14
U.S. Cl. 455—24 **5 Claims**



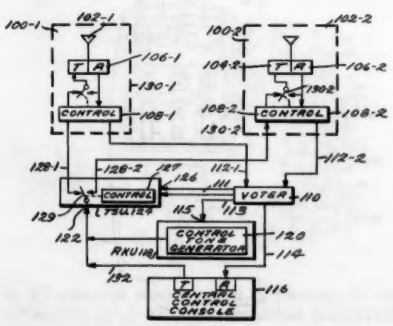
1. A method of minimizing spillover in a same-frequency repeater comprising the steps of:
   a. receiving a signal at a given RF frequency;
   b. converting the signal to an IF frequency;
   c. combining a tag signal with the signal at the IF frequency to generate a tagged IF signal;
   d. converting the tagged IF to a tagged RF signal at the given RF frequency;
   e. amplifying the tagged RF signal to produce an amplified tagged RF signal;
   f. broadcasting the amplified tagged RF signal;
   g. detecting a tag in the IF signal; and
   h. combining a variable phase and amplitude cancelling RF signal derived from the amplified tagged RF signal with the received signal to minimize the amount of detected tag.

4,317,218

ARRANGEMENT FOR REMOTE CONTROL OF REPEATER STATIONS

Fred G. Perry, Lynchburg, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Mar. 26, 1980, Ser. No. 134,331
Int. Cl.³ H04B 7/00
U.S. Cl. 455—54 **32 Claims**



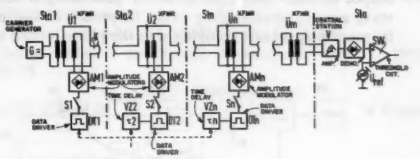
1. In a radio communication system for providing communication among mobile stations and between a central station and at least one mobile station, said system having multiple repeater stations each having a transmitter and a receiver providing detected signals from said mobile stations, and said system having at least one voter for selecting one of the detected signals in accordance with predetermined criteria and identifying the repeater station providing the selected signal, the improvement comprising:
   remote means for causing the repeater station so identified by said voter to transmit the selected signal without the selected signal being coupled through said voter, thereby minimizing signal degradation; and
   means for alternatively causing the repeater station so identified to transmit a signal originated by the central station.

4,317,219

MOBILE RADIO SYSTEM

Peter Kloeber, and Heinz Schroeter, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 9, 1980, Ser. No. 167,061
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1979, 2931084
Int. Cl.³ H04B 3/60, 7/26
U.S. Cl. 455—56 **7 Claims**



1. A radio system for communication transmission between transmitting/receiving stations located along a prescribed route of mobile transmitting/receiving stations, comprising:
   a cable;
   a plurality of stationary transmitting/receiving stations, including a central station, connected to said cable at prescribed locations along the route, with said central station connected to one end of said cable;
   a carrier signal generator connected to the other end of said cable for applying an unmodulated carrier signal to said cable;
   each of said stationary transmitting/receiving stations located between said central station and said carrier signal generator including
      a data driver including an input for receiving data and an output,
      an amplitude modulator connected to said output of said data driver, and
      a transformer including a primary winding connected to said amplitude modulator and a secondary winding connected in parallel across said cable; and
   said central station including
      a demodulator coupled to said cable, and
      a threshold value circuit connected to said demodulator and having a data output for said system.

4,317,220

SIMULCAST TRANSMISSION SYSTEM

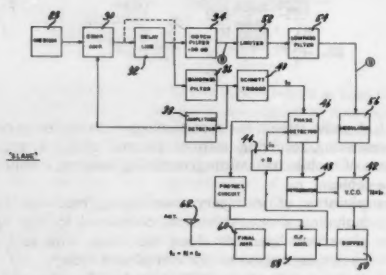
Andre' Martin, 1040 Pellerin St., Brossard, Prov. of Quebec, Canada J4W 2L3

Filed Feb. 5, 1979, Ser. No. 9,452
Int. Cl.³ H04B 1/40
U.S. Cl. 455—58 **3 Claims**

1. A simulcast transmission system comprising:
   (a) a master station including means for generating and transmitting over a medium an audio signal containing a message signal and means for generating a pilot frequency signal inserted into the audio signal band, said means for

generating a pilot frequency signal comprising a precision oscillator, a frequency divider connected to the output of said precision oscillator for generating said pilot frequency signal and a band pass filter for eliminating the harmonics of said pilot frequency signal, and wherein the means for generating said audio signal further comprises a compressor amplifier for limiting the amplitude and frequency band of said message signal within predetermined limits, a notch filter connected to the output of said compressor amplifier for withdrawing from said message signal all frequencies substantially equal to said pilot frequency signal thus creating a protected audio band slot, a mixer for inserting said pilot frequency signal into said protected audio band slot, and an output amplifier for testing the level of the audio signal depending on the medium it is transmitted through; and

(b) at least two slave stations adapted to receive the audio signal transmitted over said medium and each including a radio frequency generator of the phase locked loop type and means for isolating the pilot frequency signal from the audio signal and for synchronising the frequency of the radio frequency generator with said pilot frequency signal, wherein said last named means comprises a band pass filter for filtering said pilot frequency signal from the audio signal, a square wave generator connected to the output of said band pass filter for generating a square wave signal corresponding to the frequency of said pilot frequency signal and applying it to the phase locked loop



radio frequency generator, the latter comprising a voltage controlled oscillator generating a carrier frequency signal which is a predetermined multiple of said pilot frequency signal, a frequency divider connected to the output of said voltage controlled oscillator for providing an output signal corresponding to the frequency of said pilot frequency signal, a phase detector conntected to said frequency divider and to said square wave generator for comparing the phase of the output signal of said frequency divider with that of said pilot frequency signal, an integrator connected to the output of said phase detector for generating a D.C. voltage corresponding to the phase difference between the output signal of the frequency divider and that of the pilot frequency signal and applying said voltage to said voltage controlled oscillator for reducing said phase difference to zero, a notch filter connected in parallel with said band pass filter for withdrawing the pilot frequency signal from the audio signal transmitted by the master station to recover the message signal, a limiter connected to the output of the notch filter for limiting the frequency variations of the message signal within prescribed limits, a low pass filter connected to the output of the limiter to eliminate all frequencies of the message signal higher than 3000 Hz, and a modulator interconnecting the low pass filter and the voltage controlled oscillator for modulating the carrier frequency signal with the message signal; and

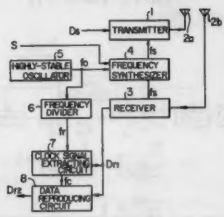
(c) a delay line connected to the input of each slave station for compensating for the difference in propagation times of the audio signal between the master station and each of the slave stations.

4,317,221

MOBILE DATA RECEIVING SYSTEM

Mitsuo Toya, Fujisawa, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 23, 1980, Ser. No. 114,689
Claims priority, application Japan, Jan. 24, 1979, 54-6089
Int. Cl.³ H04B *1/38*
U.S. Cl. 455—76 **6 Claims**



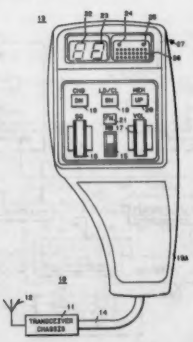
1. In a transmitter/receiver using a frequency synthesizer coupled to a transmitter and a receiver, a mobile data receiving system comprising a highly-stable oscillator coupled to said frequency synthesizer for producing a fundamental frequency for said frequency synthesizer, a frequency divider coupled to said highly stable oscillator for dividing an output frequency of said oscillator, a clock signal extracting circuit coupled to outputs of said receiver and said frequency divider for extracting a clock signal from the outputs of said frequency divider and receiver, and a data reproducing circuit coupled to outputs of said receiver and said clock signal extracting circuit for reproducing a clock signal obtained by said clock signal extracting circuit and a data signal obtained by said receiver to thereby reproduce digital data received by said receiver.

4,317,222

TRANSCEIVER/RECEIVER INFORMATION MULTIPLEXING SYSTEM

Robert R. Bell, Libertyville, Ill., and Scott T. Christians, Seguin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 31, 1979, Ser. No. 108,433
Int. Cl.³ H04B *1/40*
U.S. Cl. 455—77 **14 Claims**



1. A transceiver/receiver information multiplexing system comprising:

transceiver/receiver means having a main chassis and a

remotely located control unit coupled to the main chassis by a multiwire cable;

manually adjustable control means located on said remote control unit for adjusting the amplitude of an analog control signal for said transceiver/receiver to more than three possible amplitudes;

digital means for producing a multiple bit digital code representative of a quantity other than the amplitude of said analog control signal;

multiplexing means, including multiplexer switching circuits in each of said remote control unit and said main chassis, for periodically selectively coupling said manual control means and said digital means to said cable for serially and sequentially periodically transmitting said digital code and said analog signal amplitude on a single data conductor between said multiplexer switching circuits in said remote control unit and said main chassis; and

circuitry means located in said main chassis and coupled to said cable for periodically receiving said multiplexed analog control signal amplitude and in response thereto maintaining a fixed signal amplitude representative of the received amplitude of said analog control signal until the next periodic reception of said analog control signal amplitude, wherein said analog amplitude receiving and maintaining circuitry means in said main chassis comprises a high input impedance driving device having a control electrode coupled to a capacitor which is coupled to one of said multiplexer switching circuits and receives signals therefrom and stores an amplitude corresponding to the amplitude of said analog control signal, said fixed signal amplitude being obtained from an output terminal of said high input impedance device, said stored amplitude remaining fixed until the next reception of said analog control signal by said main chassis, whereby providing an analog to digital encoder at said remote control unit to translate said analog control signal into a digital code similar to the transmitted multiple bit digital code is avoided and a fixed signal amplitude is available for control purposes at said main chassis between periodic receptions of the multiplexed analog control signal by said main chassis.

4,317,223

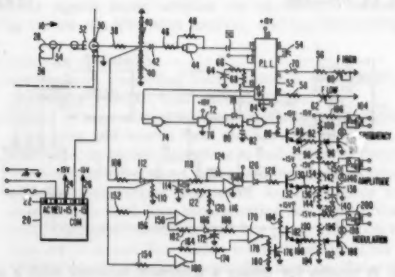
RF GENERATOR MONITOR CIRCUIT

Felta C. Farmer, Jr., Gas City, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 29, 1980, Ser. No. 173,413

Int. Cl.³ H04B *17/00*

U.S. Cl. 455—115 **7 Claims**



1. An RF generator monitor circuit for checking for variation in frequency of an RF generator outside predetermined limits, said circuit including

means for sampling the output of an RF generator,

means for clamping the sampled R.F. signal to prevent damage to the circuit from an exceptionally strong signal,

means for converting the clamped sample signal to a positive going square wave and for amplifying the square wave,

a phase locked loop integrated circuit having the amplified square wave as an input, said phase locked loop integrated circuit including a linear voltage-controlled oscillator and two different phase comparators, said phase locked loop integrated circuit including connections for comparing in both phase comparators, the input square wave signal with the voltage controlled oscillator output, for producing an error voltage proportonal to phase differences in at least one of said phase comparators, and for using the at lease one error voltage as a control for the voltage controlled oscillator,

whereby when the input square wave signal is within the predetermined frequency limits the at least one error voltage causes the voltage controlled oscillator to be adjusted to a frequency equal to that of the input signal and when said input signal is outside the predetermined limits said phase comparators providing error voltages as output signals indicative thereof.

4,317,224

OIL-COOLED RADAR TRANSMITTER APPARATUS

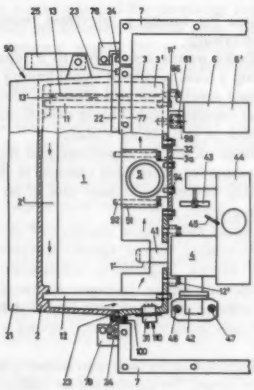
Karl Neher, Zürich, Switzerland, assignor to Siemens-Albis AG, Zürich, Switzerland

Filed Jul. 14, 1980, Ser. No. 168,584

Claims priority, application Switzerland, Aug. 7, 1979, 7228/79

Int. Cl.³ H04B *1/03*

U.S. Cl. 455—128 **6 Claims**



1. A radar transmitter apparatus comprising:

a radar transmitter;

said radar transmitter containing:

a substantially trough-shaped housing filled with oil;

a modulator arranged within said oil-filled housing;

means for mounting said modulator within said housing so as to form therein an intermediate space for the convection flow of the oil;

a substantially trough-shaped cover member for closing said trough-shaped housing;

said housing and said cover member forming therein an internal chamber containing the oil;

a magnetron having a dome;

means for attaching said magnetron to said cover member;

means for securing said modulator at the dome of said magnetron;

said cover member having an opening; a thyraton;

means for mounting said thyraton directly below said opening at said cover member;

said mounting means comprising a closure for closing said opening of said cover member; and

oil-tight throughpassage means provided for said cover member and adapted to receive therethrough electrical line means.

4,317,225

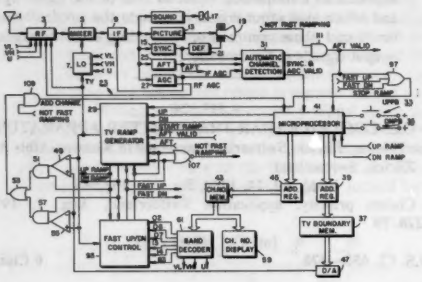
CHANNEL IDENTIFICATION APPARATUS USEFUL IN A SWEEP TYPE TUNING SYSTEM

John G. N. Henderson, and Charles M. Wine, both of Princeton, N.J., assignors to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 43,764, May 30, 1979, abandoned. This application Aug. 14, 1980, Ser. No. 178,026

Int. Cl.³ H04B *1/16;* **H03J** *7/18;* **H04N** *5/50*

U.S. Cl. 455—158 **6 Claims**



1. Apparatus for tuning a television receiver to various channels, comprising:

local oscillator means responsive to a tuning voltage for generating a local oscillator signal having frequencies for tuning said receiver to said channels, the frequencies of said local oscillator signal being determined by respective magnitudes of said tuning voltage;

tuning voltage means for generating said tuning voltage;

direction means for controlling changes in the magnitude of said tuning voltage in at least one of an increasing and decreasing sense;

memory means including a plurality of memory locations each for storing binary signals representing boundary voltages having magnitudes substantially equal to the magnitudes of tuning voltages at frequencies between tuning voltage ranges of respective adjacent channels, each of said memory locations having a respective address;

address means for addressing said memory locations;

comparison means for generating an address change signal when the magnitude of a predetermined one of the boundary voltage stored in an addressed one of said memory locations and said tuning voltage exceeds the magnitude of the other;

control means for causing said address means to address the memory location corresponding to the boundary voltage of the next channel in the order corresponding to the sense of change of the magnitude of said tuning voltage in response to said address change signal as long as the magnitude of said tuning voltage is being substantially changed by said direction means;

channel number means for generating binary signals representing channel numbers of said channel;

said control means causing said channel number means to generate the binary signals representing the channel number next in the order corresponding to the sense of the change of the magnitude of said tuning voltage in response to said address change signal as long as the magnitude of said tuning voltage is being substantially changed by said direction means; and

display means responsive to the binary signals representing said channel numbers for displaying said channel numbers.

4,317,226

CIRCUIT ARRANGEMENT FOR TUNING INTO ONE OF A NUMBER OF RADIOELECTRIC SIGNALS

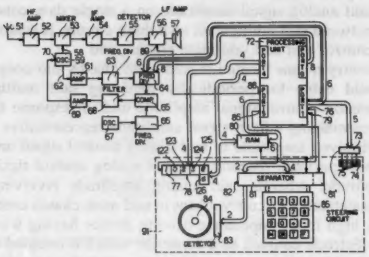
Pietro Belisomi, Pinerolo, Italy, assignor to Indesit Industria Elettrodomestici Italiana S.p.A., Turin, Italy

Filed Jun. 30, 1980, Ser. No. 164,849

Claims priority, application Italy, Jul. 2, 1979, 68393 A/79

Int. Cl.³ H04B *1/26*

U.S. Cl. 455—174 **10 Claims**



1. A circuit arrangement for tuning into one of a number of radioelectric signals receivable on a signal receiver, comprising a controllable oscillator the frequency of which is determined by a control loop depending on a digital number N from a processing unit, in turn, dependent on coded input data; the loop comprising frequency dividing means for obtaining a first signal from the controllable oscillator dependent at least on the number N and means for comparing said first signal with a second frequency reference signal so as to obtain a third signal for required tuning, characterised by means for preventing signals from being sent to a loudspeaker for a preset length of time if the time rate of change of the number N within a preset time interval exceeds a preset threshold.

4,317,227

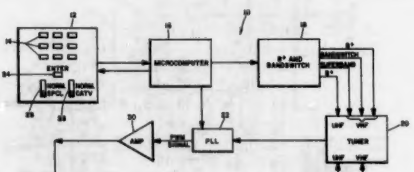
MULTI-MODE AUTOMATIC CHANNEL FREQUENCY SYNTHESIS SYSTEM

Peter C. Skerlos, Arlington Heights, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Jun. 9, 1980, Ser. No. 157,573

Int. Cl.³ H04B *1/16;* **H03J** *5/00*

U.S. Cl. 455—180 **12 Claims**



1. A system for tuning a television receiver with a single tuner to both airborne and cable television signals over a plurality of frequency bands comprising:

channel selection means for providing a first series of digital signals representative of a selected television channel number;

signal processing means for receiving said first series of digital signals and for generating a second series of digital

signals representing the frequency of said selected television channel and the frequency band in which said selected television channel lies;

tuning means having a plurality of tunable stages each including an inductive reactance, a varactor diode exhibiting capacitance variations in response to changes in an applied DC tuning voltage permitting said television receiver to be tuned to all channels in each of said frequency bands, and bandswitch means for adjusting the value of said inductive reactance in said tuning means for enabling said tuning means to be tuned to signals in said plurality of frequency bands, said tuning means possessing a capacitance variation range insufficient, in conjunction with said inductive reactance, to permit said tuning means to be tuned to both airborne and cable television signals;

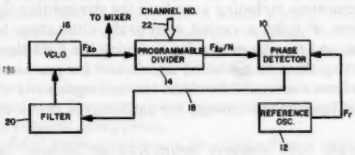
bandswitch signal generating means responsive to said second series of digital signals representing the frequency band in which said selected television channel lies and coupled to said bandswitch means for adjusting the value of said inductive reactance in said tuning means to permit reception of signals in the frequency band in which said selected television channel lies; and

tuning voltage generating means responsive to said second series of digital signals representing the number of said selected television channel and coupled to said varactor diodes in said tuning means for varying the capacitance of said tunable stages to permit said tuning means to be tuned to all television signals in said plurality of frequency bands.

4,317,228
TELEVISION RECEIVER HAVING MULTIPLEXED PHASE LOCK LOOP TUNING SYSTEM

Melvin C. Hendrickson, Elmhurst, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Oct. 15, 1979, Ser. No. 84,707
Int. Cl.³ H04B 1/26
U.S. Cl. 455—183 **11 Claims**



1. Apparatus for simultaneously generating first and second local oscillator signals in response to simultaneously developed first and second tuning information signals, each of said local oscillator signals being adapted for operating a respective tuning system of a television receiver, said apparatus comprising:

a reference oscillator;

a first voltage controlled local oscillator controllable for generating said first local oscillator signal;

a second voltage controlled local oscillator controllable for generating said second local oscillator signal;

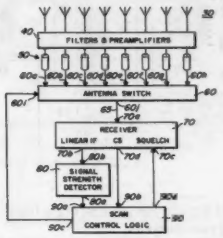
phase lock loop means responsive to said reference oscillator for alternately forming a first phase lock loop incorporating said first voltage controlled local oscillator and a second phase lock loop incorporating said second voltage controlled local oscillator, said first phase lock loop being responsive to said first tuning information signal for controlling said first voltage controlled local oscillator signal for continuously generating said first local oscillator signal and said second phase lock loop being responsive to said second tuning information signal for controlling said second voltage controlled local oscillator for continuously generating said second local oscillator signal; and

said phase lock loop means including a resettable phase detector and means for resetting said phase detector each time one of said first and second phase lock loops is formed.

4,317,229
SECTORED ANTENNA RECEIVING SYSTEM

Timothy P. Craig, Georgetown, Ky.; James R. Stimple, Santa Rosa, Calif., and Paul M. Erickson, Schaumburg, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 35,745, May 3, 1979, abandoned, which is a continuation of Ser. No. 792,961, May 2, 1977, abandoned. This application Feb. 25, 1980, Ser. No. 124,484
Int. Cl.³ H04B 7/08
U.S. Cl. 455—277 **35 Claims**



1. A radio frequency communication system, comprising:

(a) sectored antenna array means having a plurality of antenna sectors;

(b) receiver means adapted for receiving radio frequency signals from the sectored antenna array including signal strength detector means for producing a peak signal strength value representative of the strength of the radio frequency signal being received;

(c) means for sequentially coupling the individual antenna sectors to said receiver means thereby scanning the antenna array means, and having scan control means for controlling scanning, including

storing means for storing peak signal strength values from the receiver during scanning,

comparator means for comparing said peak signal strength values to a reference level and generating a control signal in response to a predetermined relationship therebetween,

scan means for general scanning of the antenna array means and storing of the peak signal strength value from each sector in said storing means, for terminating the scanning after a first time interval in response to the control signal, and then scanning only a number of selected sectors less than said plurality for a second time interval, and for inhibiting the scanning and coupling the receiver to a selected one of the selected sectors.

4,317,230
BROAD-BAND PASSIVE RING MIXER

Albert Boubouleix, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Dec. 13, 1979, Ser. No. 103,152
Claims priority, application France, Dec. 15, 1978, 78 35387
Int. Cl.³ H04B 1/28
U.S. Cl. 455—319 **4 Claims**

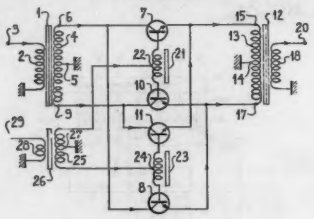
1. A ring mixer comprising:

a first transformer having a primary winding adapted to receive an input signal to the mixer and a secondary winding having first and second ends and a center-tap, the center-tap being coupled to circuit ground;

a second transformer having a secondary winding for supplying an output signal of the mixer and a primary wind-

ing having first and second ends and a center-tap, the center-tap being coupled to circuit ground;

first, second, third, and fourth transistors, the collectors of the first and the third transistors being connected to the first end of the secondary winding of the first transformer, the collectors of the second and the fourth transistors being connected to the second end of the secondary winding of the first transformer, the emitters of the first and the fourth transistors being connected to the first end of the primary winding of the second transformer, the emitters of the second and the third transistors being connected to the second end of the primary winding of the second transformer;



a symmetrical device for generating a local oscillating signal and having two outputs;

a first choke, having (a) a high coupling factor among the turns thereof, (b) a center tap coupled to one of the outputs of the symmetrical generating device and (c) two ends;

a second choke, having (a) a high coupling factor among the turns thereof, (b) a center-tap coupled to the other of the two outputs of the symmetrical generating device and (c) two ends; the two ends of the first choke supplying in phase the bases of the first and second transistors, respectively, the two ends of the second choke supplying in phase the bases of the third and fourth transistors, respectively.

4,317,231

MICROWAVE CIRCUIT FOR A PARAMETRIC UPPER SIDEBAND DOWN CONVERTER

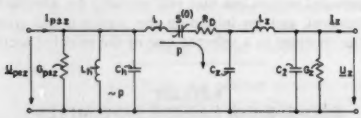
Robert Maurer, Saarbrücken, and Walter Schau, Dudweiler, both of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 18, 1980, Ser. No. 113,265

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1979, 2901782

Int. Cl.³ H04B *1/26*; H03F *7/04*

U.S. Cl. 455—330 **6 Claims**



1. In a microwave circuit for a parametric upper sideband down converter with real image frequency termination conductance, including a pump circuit supplying a pump signal, a parallel circuit at its input, an intermediate frequency circuit at its output, and a reactance diode coupling the parallel circuit and intermediate frequency circuit together, the improvement wherein said parallel circuit is tuned approximately to the frequency of said pump signal; said intermediate frequency circuit comprises a π filter composed of a series branch containing a first inductance connected in series between said diode and the output of said microwave circuit, a first shunt branch located between said diode and said inductance and containing a first capacitance and a second shunt branch located between said inductance and the output of said microwave circuit and containing a second capacitance; said microwave circuit further comprises a second inductance connected in series with said reactance diode; and the portion of said microwave circuit constituted by said diode, said second inductance and said first capacitance is tuned to the frequency of said pump signal.

4,317,232

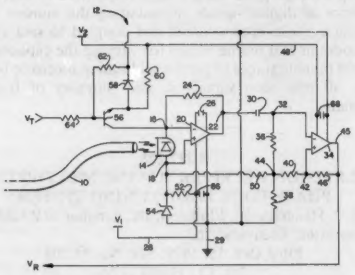
FIBER OPTIC SIGNAL CONDITIONING CIRCUIT

Terence D. Pickett, Waterloo, and Charles W. Formwalt, Jr., Cedar Falls, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Jan. 12, 1979, Ser. No. 2,845

Int. Cl.³ H04B *9/00*

U.S. Cl. 455—606 **21 Claims**



1. In a data transmission system capable of high speed data communication including a medium for transmitting signals in the form of light, a circuit selectively alternating between transmit and receive modes for receiving the light signals and converting them to electrical signals and for producing light signals from a source of electrical transmit signals and transmitting said light signals through the medium, the circuit comprising:

a single light emissive semiconductor element optically coupled to the medium and including a pair of terminals, the element producing a light output when a current of a first polarity is provided between the terminals and alternately producing an output current flow between the terminals when the light signals impinge upon the element; and

circuit means connected to the element terminals for producing the light transmission signals from the electrical transmit signals and, alternately, the electrical signals from the received light signals, said circuit means comprising:

an amplifier having a pair of inputs connected to the respective terminals during both the transmit and receive modes of circuit operation and responsive to the output current flow during the receive mode to provide an output signal indicative of the light signals received from the medium; and

current means connected in series with the semiconductor element during both the transmit and receive modes of circuit operation and responsive to the presence of an electrical transmit signal from the source for automatically selecting the transmit mode of operation and providing the current between the terminals to produce the light signals to be transmitted, wherein in the absence of an electrical transmit signal from the source the receive mode of operation is automatically selected.

4,317,233
TELEPHONE SUBSCRIBER STATION

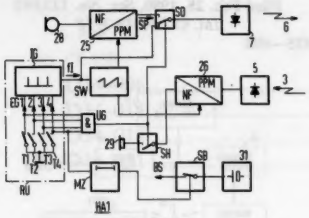
Gerhard Kunde, Munich; Siegfried Schoen, Starnberg, and Herwig Trimmel, Puchheim, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 16, 1980, Ser. No. 197,561

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1979, 2943867

Int. Cl.³ H04B 9/00

U.S. Cl. 455—606 **11 Claims**



1. In a telephone subscriber station of the type which has a cordless hand set and a base set for connection to a telephone network, a first transmission path including a first low frequency/pulse phase modulation converter and a first infrared transmitter in the base set connected via a first optical channel to a first infrared pulse receiver and a first pulse phase modulation/low frequency converter in the hand set, and a second transmission path including a second low frequency/pulse phase modulation converter and a second infrared transmitter in the hand set connected via a second optical channel to a second infrared receiver and a second pulse phase modulation/low frequency converter in the base set in which first and second sawtooth generators are provided in the base set and hand set, respectively connected to drive the two converters of the respective base and hand sets, in which a phase synchronization circuit is provided in the base set connected between the second pulse phase modulation/low frequency converter and the first sawtooth generator for phase synchronization, and in which a calling device is provided in the hand set connected to the second low frequency/pulse phase modulation converter, the improvement comprising:

a controllable pulse generator in the calling device operable to drive the second low frequency/pulse phase modulation converter and second infrared transmitter to produce a plurality of pulse frequencies, each representing a respective special character; and a frequency recognition circuit in the base set connected to the second infrared receiver, including a plurality of outputs, and operable to emit a signal on a respective output in response to the received pulse frequency.

4,317,234
TELEPHONE SUBSCRIBER STATION

Gerhard Kunde, Munich, and Siegfried Schoen, Starnberg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

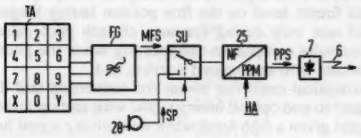
Filed Oct. 16, 1980, Ser. No. 197,562

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1979, 2943866

Int. Cl.³ H04B 9/00

U.S. Cl. 455—606 **4 Claims**

1. In a telephone subscriber station of the type in which a base set and a cordless hand set are coupled via first and second transmission paths, in which the first transmission path comprises a first low frequency/pulse phase modulation converter driving a first infrared transmitter in the base set, and a first infrared receiver coupled to the first infrared transmitter via a first optical channel and driving a first pulse phase modulation/low frequency converter in the hand set, in which the second transmission path comprises a second low frequency/pulse phase modulation converter driving a second infrared transmitter in the hand set and a second infrared receiver coupled to said second infrared transmitter via a second optical channel and driving a second pulse phase modulation/low frequency converter in the base set, in which the base set and the hand set include respective sawtooth generators connected to their respective converters and the base set includes a synchronizing circuit connected between the second pulse phase modulation/low frequency converter and the respective sawtooth generator, and in which a signaling device is provided in



the hand set and connected to the second low frequency/pulse phase modulation converter, the improvement wherein:

the signaling device comprises

a selection device operable to produce selection signals corresponding to calling characters and special function characters; and a frequency generator connected to said selection device and to said second low frequency/pulse responsive phase modulation converter and responsive to a selection signal to produce a corresponding multifrequency signal for conversion and transmission to the base set for reconversion by the second pulse phase modulation/low frequency converter.

4,317,235
SYSTEM FOR TRANSMITTING OPTICAL BINARY DATA SIGNALS THROUGH AN OPTICAL FIBER WITH PILOT PULSES INSERTED BETWEEN TWO WIDE SPACED SUCCESSIONS OF DATA SIGNALS

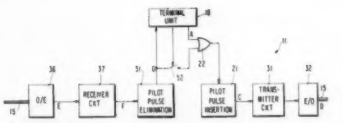
Kazumasa Tsukada, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed May 7, 1980, Ser. No. 147,685

Claims priority, application Japan, May 10, 1979, 54-57498

Int. Cl.³ H04B 9/00

U.S. Cl. 455—607 **5 Claims**



1. An optical data transmission system comprising a transmitter and a receiver, said transmitter and said receiver being coupled to an optical fiber, said transmitter being for transmitting data as an optical binary signal (D) to said receiver through said optical fiber;

said transmitter comprising:

delay means for giving a predetermined delay (t_1) to an input binary signal (A) taking a first and a second level at a time depending on said data to produce a delayed binary signal (A') comprising a first and a second portion having a third and a fourth level and derived with said predetermined delay from those portions of said input binary signals which have said first and said second levels, respectively;

pilot pulse generating means responsive to said input binary signal for generating a sequence (B) of pilot pulses at a preselected pulse interval (t_2), each pilot pulse having a preselected pulse width (t_3) not wider than a half of said pulse interval, a leading edge varying from one to the other of said third and said fourth levels, and a trailing

edge varying from said other to said one of the third and the fourth levels and being generated only when that portion of said input binary signal which has said first level lasts not shorter than a sum of said pulse interval and said pulse width after either of a leading edge of the last-mentioned portion or the trailing edge of a pilot pulse next preceding said each pilot pulse, said predetermined delay being shorter than a half of said pulse interval and longer than said pulse width;

logic circuit means for combining said pilot pulse sequence and said delayed binary signal to produce an electrical binary driving signal comprising said first and said second portions with a pilot pulse component superposed with said fourth level on the first portion lasting longer than said sum only during presence of each pilot pulse, said pilot pulse component disappearing when the pilot pulse coexists with said second portion; and

electrooptical converter means for converting said driving signal to said optical binary signal with said optical binary signal given a fifth level when said driving signal has said fourth level;

said receiver comprising:

optoelectrical converter means for converting the optical binary signal received through said optical fiber to a received electrical signal (E) given a sixth level substantially when the received optical binary signal has a seventh level corresponding to said fifth level;

shaping means for shaping said received electrical signal into a received binary signal (F) with reference to those portions of said received electrical signal which have said sixth level, said received binary signal comprising a data signal component and a received pilot pulse component resulting from the second portion and the pilot pulse component comprised by said electrical driving signal; and

received pilot pulse component removing means responsive to said received binary signal for removing therefrom said received pilot pulse component to produce a reproduction (G) of said input binary signal.

4,317,236

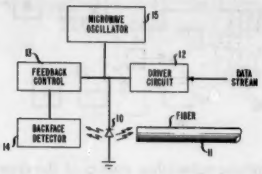
LASER DIGITAL TRANSMITTER

Fridolin L. Bosch, Bethlehem; Gay L. Dybwad, Emmaus, and Clarence B. Swan, Allentown, all of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 25, 1980, Ser. No. 123,953

Int. Cl.³ H01S *3/18*

U.S. Cl. 455—608 **14 Claims**



1. A method for operating a single mode solid state injection laser to produce a digital light output in a fiber optic system comprising the step of applying to said laser a signal in the form of pulses including the desired digital information, characterized in that a microwave modulation current having a frequency at least five times the pulse rate of the digital signal is superimposed on said digital signal to essentially eliminate modal noise from the light output in the fiber.

DESIGN PATENTS

GRANTED FEB. 23, 1982

ERRATA

For CLASS	See PATENT NO.
D34–006	263,109
D34–014	263,126
D34–018	263,127
D34–031	263,128

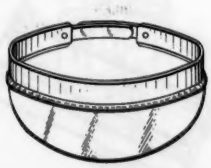
DESIGNS

FEBRUARY 23, 1982

263,090
JUVENILE DRESS
Shirley H. Digiandomenico, 72 Barton Rd., Wellesley Hills, Mass. 02181; Mary P. S. Gilmore, deceased, late of Auburndale, Mass., and by Thomas L. Gilmore, administrator, Jamaica Plain, Mass.
Filed Jun. 12, 1978, Ser. No. 914,567
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—81

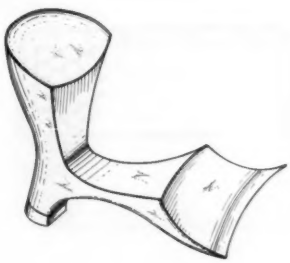
263,091
RACQUETBALL HELMET
Richard C. Booth, P.O. Box 12639, Tallahassee, Fla. 32308
Filed Jan. 26, 1979, Ser. No. 6,600
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—231

263,092
VISORED HEADGEAR
William L. Fay, Wellesley Hills, Mass., assignor to Visor-Trac, Inc., Rockville Center, N.Y.
Filed Mar. 6, 1978, Ser. No. 884,023
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—241

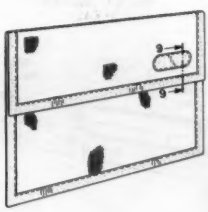


263,093
SUPPORT FOR AN EAR PROTECTOR
Bo G. Lönnstedt, Almvägen 5, S-191 41 Sollentuna, Sweden
Filed Sep. 24, 1979, Ser. No. 78,024
Claims priority, application Sweden, Apr. 5, 1979, 79-0876
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—259

263,094
HEEL FOR LADIES' SHOE
Jean Mazabras, Romans, France, assignor to Societe des Chaussures Seducta Charles Jourdan & Fils, Romans, France
Filed Aug. 30, 1979, Ser. No. 71,410
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—324

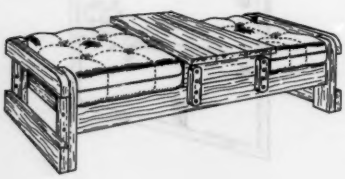


263,095
CARRYING CASE FOR DOCUMENTS OR THE LIKE
Michel Wajs, and Helene Wajs, both of Rue de Fiennes 61, 1070 Bruxelles, Belgium
Filed Jun. 18, 1979, Ser. No. 49,479
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—52

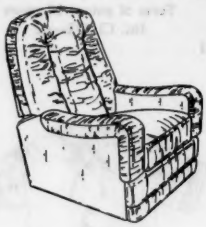


263,096
HAIR BRUSH
Jean L. Wachtel, Selestat, France, assignor to Celluloid S.A., France
Filed Nov. 14, 1979, Ser. No. 94,324
Claims priority, application France, May 15, 1979, 79 174
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—35

263,097
COMBINED TABLE AND OTTOMAN
Benjamin C. Poole, Florence, Ala., assignor to Ajax Industries, Inc., Florence, Ala.
Filed Jun. 28, 1979, Ser. No. 53,058
Term of patent 14 years
Int. Cl. D6—*05*
U.S. Cl. D6—4



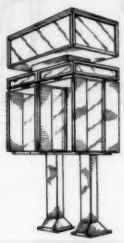
263,098
ARMCHAIR OR SIMILAR ARTICLE
Stapleton Long, Morristown, Tenn., assignor to The Berkline Corporation, Morristown, Tenn.
Division of Ser. No. 17,363, Mar. 5, 1979. This application Oct. 20, 1980, Ser. No. 199,073
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—37



263,099
TOWEL RACK
Bruce R. Thompson, Tranmere, Australia, assignor to UPL Group Limited, Brisbane, Australia
Filed Feb. 22, 1980, Ser. No. 123,556
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—99

263,100
LOCKABLE DRAWER UNIT
Bruce R. Thompson, Tranmere, Australia, assignor to UPL Group Limited, Brisbane, Australia
Filed Feb. 13, 1980, Ser. No. 121,240
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—129

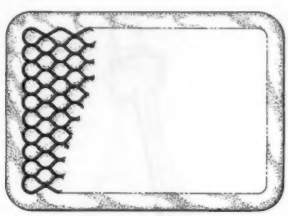
263,101
COMBINED TELEPHONE BOOTH AND ADVERTISING DISPLAY UNIT
J. Rembrandt George, 91 Pine St., Garden City, N.Y. 11530, and William L. Schuyler, Rte. 1, Box 208, Denton, Md. 21629
Filed Aug. 9, 1979, Ser. No. 65,140
Term of patent 14 years
Int. Cl. D25—*03;* D20—*02;* D26—*03*
U.S. Cl. D6—157



263,102
COMBINED TELEPHONE BOOTH AND ADVERTISING DISPLAY UNIT
J. Rembrandt George, 91 Pine St., Garden City, N.Y. 11530, and William L. Schuyler, Rte. 1, Box 208, Denton, Md. 21629
Filed Aug. 9, 1979, Ser. No. 65,141
Term of patent 14 years
Int. Cl. D25—*03;* D20—*02;* D26—*03*
U.S. Cl. D6—157

263,103
COLLAPSIBLE FLORAL BASKET SUPPORT
Stanley E. Williams, McLeansboro, Ill., assignor to George Koch Sons, Inc., Evansville, Ind.
Filed Sep. 19, 1979, Ser. No. 77,127
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—183

263,104
FOAM MATTRESS CORE
Robert J. Stalter, Sr., Bowling Green, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Sep. 22, 1977, Ser. No. 835,552
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D6—201

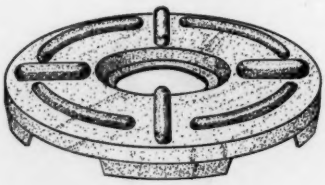


263,105
ELECTRIC BEVERAGE MAKER
Yasukichi Okazaki, and Tatsuo Okazaki, both of Kamifukuoka, Japan, assignors to Kabushikigaisha OMCO, Saitama, Japan
Filed Nov. 28, 1978, Ser. No. 964,425
Claims priority, application Japan, Jan. 10, 1978, 53-389
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—62

263,106
SHIELDED NUTCRACKER
Robert D. Norton, Jonesboro, Ark., assignor to Handy Andy Industries, Inc., Jonesboro, Ark.
Filed Feb. 7, 1980, Ser. No. 119,412
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—98

263,107
SYRINGE
Peter C. R. Hildebrand, Newcastle, Ireland, assignor to Arthur Guinness Son & Company (Dublin) Limited, Dublin, Ireland
Filed Dec. 31, 1979, Ser. No. 108,693
Claims priority, application United Kingdom, Jul. 13, 1979, 990690/79
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—99

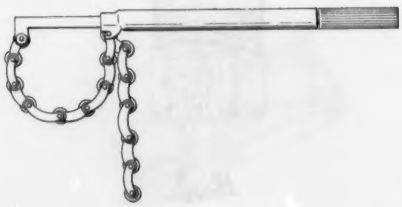
263,108
COOKING UTENSIL SUPPORT FOR A GAS RANGE
Charles A. Juracsik, 4 Pearl Dr., Toms River, N.J. 08753
Filed Dec. 28, 1979, Ser. No. 107,929
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—136



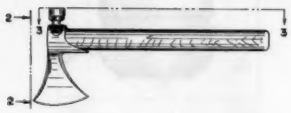
263,109
BAG HOLDER
Thomas D. Peterson, c/o Grain Elevator Construction Materials Ltd., 469-471 Jarvis Ave., Winnipeg, Manitoba, Canada (R2W 3A8)
Filed Mar. 31, 1980, Ser. No. 135,592
Claims priority, application Canada, Feb. 25, 1980, 25-02-80-4
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D34—6

263,110
COMBINED WIRE AND BOLT PLIERS
Alfred Z. Bo[illegible]an, P.O. Box 811, Manhattan Beach, Calif. 90268
Filed Dec. 10, 1979, Ser. No. 101,886
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—52

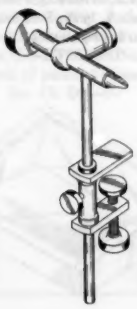
263,111
CHAIN-TYPE PIPE CUTTER
Alex Besenbruch, Isabella, P.R., assignor to CTA Manufacturing Corporation, New York, N.Y.
Filed Nov. 29, 1979, Ser. No. 98,482
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—60



263,112
THROWING HAWK
Arthur J. Ressel, St. Louis County, Mo.
Filed Sep. 24, 1979, Ser. No. 78,150
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—81



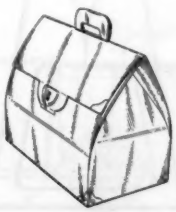
263,113
FLY TYING VISE
George E. Gehrke, Drawer 1204, Salida, Colo. 81201
Filed Oct. 1, 1979, Ser. No. 80,578
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—74



263,114
ADJUSTABLE SHELF SUPPORT
Edward F. Sette, 400 S. 18th St., Sparks, Nev. 89431
Filed Nov. 2, 1979, Ser. No. 90,737
Term of patent 14 years
Int. Cl. D8—*06*; D6—*06*
U.S. Cl. D8—381

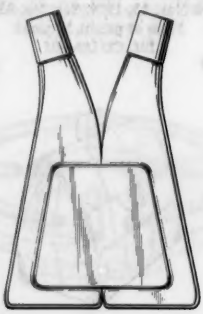
263,115
BOTTLE OR THE LIKE
Shigeshi Ohmori, Kobe, Japan, assignor to Suntory Limited, Osaka, Japan
Filed Mar. 15, 1978, Ser. No. 886,929
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—320

263,116
PACKAGING CONTAINER
Jason S. Cain, 104 Crosby Ct., Walnut Creek, Calif. 94598
Filed Nov. 13, 1979, Ser. No. 93,262
Term of patent 3½ years
Int. Cl. D9—*03*
U.S. Cl. D9—327



263,117
COMBINED BOTTLE AND SQUEEGEE PACKAGE
Frank J. Mack, Kinnelon, N.J., assignor to American Home Products Corporation, New York, N.Y.
Filed Mar. 9, 1979, Ser. No. 19,192
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—337

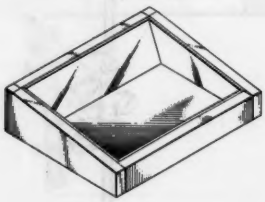
263,118
DUAL COMPARTMENT BOTTLE
Richard L. Weckman, Perrysburg, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Jan. 18, 1980, Ser. No. 113,864
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—341



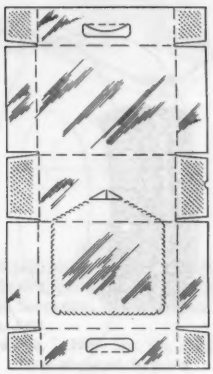
263,119
COMBINED BOTTLE AND CAP
Koji Oshita, Tokyo, Japan, assignor to Societe d' Assistance Technique pour Products Nestle S.A., Lausanne, Switzerland
Filed Aug. 6, 1979, Ser. No. 63,944
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—352

263,120
POWDER DISPENSER
Gregory Fossella, Boston; Michael J. Mercandante, North Quincy, and John B. MacDonald, Boston, all of Mass., assignors to Certified Chemicals, Inc., Cinnaminson, N.J.
Filed Aug. 13, 1979, Ser. No. 66,345
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—366

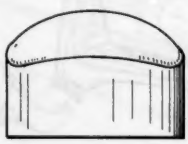
263,121
DISPLAY BOX
Wilma J. Lowry, 1221 S. Wheeling Way, Aurora, Colo. 80012
Filed Dec. 5, 1979, Ser. No. 100,512
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—432



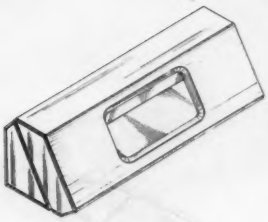
263,122
CARTON BLANK
Bruno C. Bonczyk, East Alton, Ill., assignor to Alton Box Board Company, Alton, Ill.
Filed Jun. 4, 1979, Ser. No. 45,071
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—433



263,123
CAP FOR A CONTAINER
Frederick B. Hadtke, New Providence, and John A. Grip, Madison Township, Middlesex County, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.
Filed Nov. 13, 1979, Ser. No. 93,580
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—445

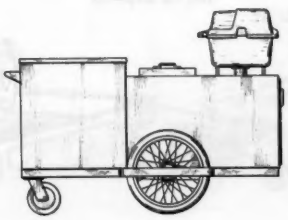


263,124
DIGITAL CLOCK CASE
Richard E. Dennis, 4250 Williams Rd., San Jose, Calif. 95129
Filed Dec. 26, 1979, Ser. No. 106,944
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—1



263,125
HOUSING FOR A PRESSURE DETECTING PROBE HAVING A DIGITAL READOUT
Julian S. Taylor, 8300 SW. 8, Oklahoma City, Okla. 73108
Filed Sep. 24, 1979, Ser. No. 78,128
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—85

263,126
MOBILE SERVING UNIT
Daniel P. Mauzy, 6928 Glades, St. Louis, Mo. 63139
Filed Mar. 12, 1979, Ser. No. 19,860
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D34—14



263,127

LUGGAGE CART WITH ADULT SEAT

James M. Muellner, White Bear Lake, Minn., assignor to Smarte Carte, Inc., White Bear Lake, Minn.

Filed May 4, 1979, Ser. No. 36,212

Term of patent 14 years

Int. Cl. D12—*02*

U.S. Cl. D34—18

263,128

FLOOR JACK

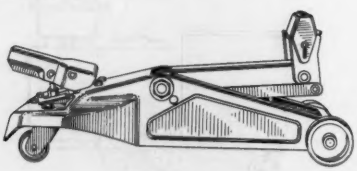
Donald W. Glover, Jr., Feasterville, and Edward J. Dadura, Sr., Churchville, both of Pa., assignors to Philmont Steel Products, Inc., Huntingdon Valley, Pa.

Filed Oct. 25, 1979, Ser. No. 88,236

Term of patent 14 years

Int. Cl. D12—*05*

U.S. Cl. D34—31



263,129

TIRE

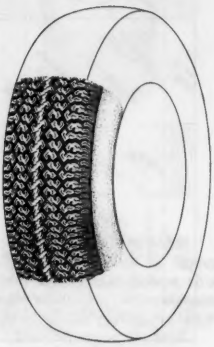
Ronald L. Loeffler, Akron; Michael A. Kolowski, Mogadore; Chester J. Gasowski, Uniontown; Daniel J. Lindner, Canal Fulton; John C. Smithkey, North Canton, all of Ohio, and Harold D. Fetty, Birmingham, Mich., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Feb. 11, 1980, Ser. No. 120,586

Term of patent 14 years

Int. Cl. D12—*15*

U.S. Cl. D12—146



263,130

REAR VIEW MIRROR

Alberto Vitaloni, Turin, Italy, assignor to Vitaloni S.p.A., Beinasco, Italy

Filed Sep. 28, 1979, Ser. No. 79,917

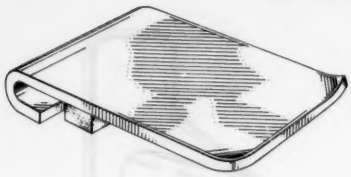
Claims priority, application Italy, Apr. 30, 1979, 53224 B/79

Term of patent 14 years

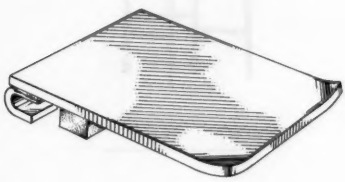
Int. Cl. D12—*16*

U.S. Cl. D12—187

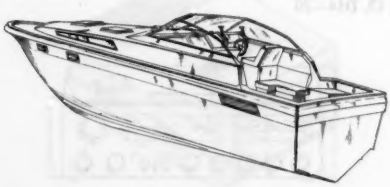
263,131
PORTABLE DETACHABLE STEP FOR MOUNTING ON BUMPERS OF VEHICLES
Mark T. Mitchell, Scottsdale, Ariz., assignor to Marco Mfg., Inc., Scottsdale, Ariz.
Filed Feb. 7, 1980, Ser. No. 119,589
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—203



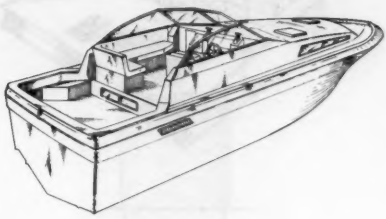
263,132
PORTABLE DETACHABLE STEP FOR CONNECTING TO THE FRONT BUMPER OF A VEHICLE
Mark T. Mitchell, Scottsdale, Ariz., assignor to Marco Mfg., Inc., Scottsdale, Ariz.
Filed Feb. 7, 1980, Ser. No. 119,590
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—203



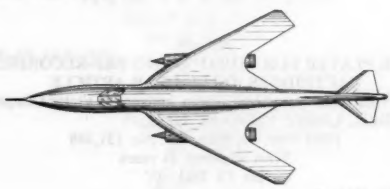
263,133
MOTOR BOAT
Daryl G. Watson, Stanwood, Wash., assignor to Bayliner Marine Corporation, Arlington, Wash.
Filed Aug. 2, 1979, Ser. No. 63,195
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—315

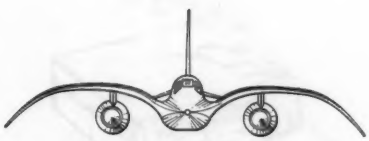


263,134
MOTOR BOAT
Daryl G. Watson, Stanwood, Wash., assignor to Bayliner Marine Corporation, Arlington, Wash.
Filed Aug. 2, 1979, Ser. No. 63,196
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—314

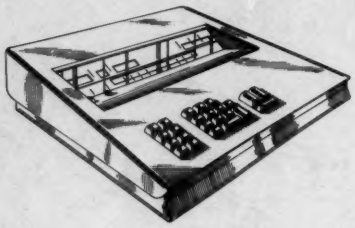


263,135
AIRPLANE
Gottfried O. Friebel, Bellevue, and Robert M. Kulfan, Kirkland, both of Wash., assignors to The Boeing Company, Seattle, Wash.
Filed Aug. 13, 1979, Ser. No. 65,794
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—341



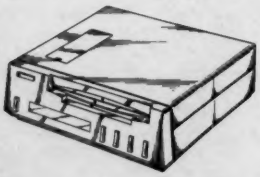


263,136
EQUIPMENT CONSOLE
Fred Gore, Dallas, Tex., assignor to Jatex, Inc., Dallas, Tex.
Filed Sep. 7, 1979, Ser. No. 73,363
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—1



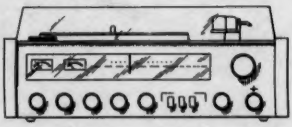
263,137
VIDEODISC PLAYER
Takayuki Hiraki, Yokohama, Japan, assignor to Universal Pioneer Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 9, 1979, Ser. No. 92,896
Term of patent 7 years
Int. Cl. D14—*01*
U.S. Cl. D14—1

263,138
DISK PLAYER FOR VIDEO/AUDIO PRE-RECORDED CARTRIDGES, OR SIMILAR ARTICLE
Rikio Uchiyama, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan
Filed Mar. 17, 1980, Ser. No. 131,388
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—1

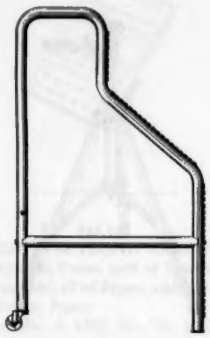


263,139
COMBINED RADIO TRANSMITTER AND CASSETTE PLAYER FOR A ONE-WAY PRIVATE CHANNEL COMMUNICATIONS SYSTEM
Ross J. Petrie, Fort Lauderdale, Fla., assignor to Doris J. Leeds, Miami Beach, Fla.
Filed Jan. 23, 1980, Ser. No. 114,727
Term of patent 14 years
Int. Cl. D14—*03, 01*
U.S. Cl. D14—5

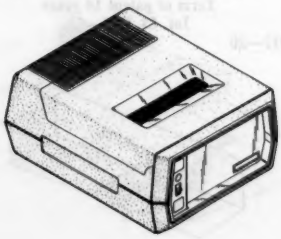
263,140
COMBINED RECORD PLAYER, TUNER AND AMPLIFIER
Ngar S. Lee, Hong Kong, Hong Kong, assignor to Tat Ming Electronics Limited, Chai Wan, Hong Kong
Filed May 30, 1978, Ser. No. 910,747
Claims priority, application United Kingdom, Feb. 21, 1978, 983435/78
Term of patent 14 years
Int. Cl. D14—*01, 03*
U.S. Cl. D14—20



263,141
RACK FOR MOUNTING SOUND REINFORCEMENT SYSTEMS OR THE LIKE
Tom Konopka, 6109 Thornton Dr., Parma, Ohio 44129
Filed Mar. 7, 1979, Ser. No. 18,160
Term of patent 14 years
Int. Cl. D14—*99*
U.S. Cl. D14—38



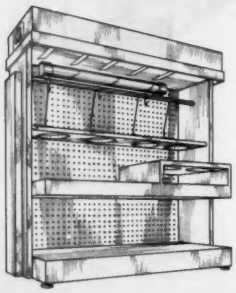
263,142
PRINTER HOUSING
Roy Nishi, and Russell W. Farnell, both of San Jose, Calif., assignors to Atari, Inc., Sunnyvale, Calif.
Filed Apr. 2, 1979, Ser. No. 26,155
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—111



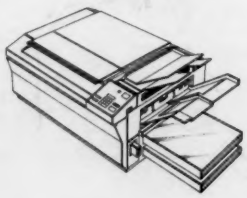
263,143
PAGING RADIO RECEIVER
Robert R. Huntington, Lynchburg, Va., and Hans J. Vendelso, Lyngby, Denmark, assignors to General Electric Company, Lynchburg, Va.
Filed Oct. 5, 1979, Ser. No. 82,129
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—95

263,144
PORTABLE POWER DRIVE
Richard J. Martin, Lorain County, and Richard J. Mittendorf, Erie County, both of Ohio, assignors to Emerson Electric Co., St. Louis, Mo.
Filed Oct. 4, 1979, Ser. No. 81,877
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—127

263,145
SUPPORT UNIT FOR CLEANING AND ELECTROPLATING EQUIPMENT OR THE LIKE
Richard S. Cercone, 200 Donbey Dr., Allison Park, Pa. 15237
Filed Jan. 12, 1979, Ser. No. 3,002
Term of patent 14 years
Int. Cl. D15—*09;* D6—*06*
U.S. Cl. D15—141



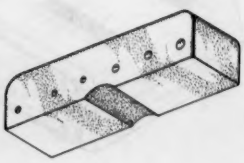
263,146
ELECTROSTATIC COPIER
Toshio Yamamoto, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan
Filed Jan. 2, 1980, Ser. No. 109,060
Claims priority, application Japan, Jul. 13, 1979, 54-29241
Term of patent 7 years
Int. Cl. D16—*03*
U.S. Cl. D16—31



263,147
TRIPOD
Osamu Iwasaki, Tokorozawa, Japan, assignor to Slik Tripod Co., Ltd., Saitama, Japan
Filed Dec. 13, 1979, Ser. No. 103,039
Claims priority, application Japan, Jun. 19, 1979, 54-25208; Jun. 29, 1979, 54-26869
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—45

263,148
GUITAR BODY
Lloyd M. Adams, 1545-225 Sonora Dr., Chula Vista, Calif. 92011
Filed Feb. 1, 1979, Ser. No. 3,656
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—20

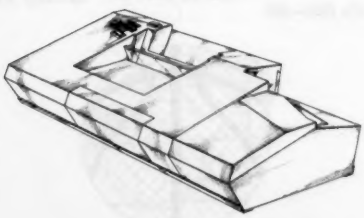
263,149
NUT FOR GUITARS
Gregg Wilson, Placentia, Calif., assignor to CBS Inc., New York, N.Y.
Filed Sep. 20, 1979, Ser. No. 77,277
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—20



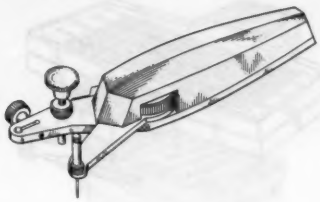
263,150
DESK TOP ELECTRONIC CALCULATOR
Shiro Anzai, Yamato, and Kaname Suwa, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 28, 1980, Ser. No. 125,687
Claims priority, application Japan, Aug. 31, 1979, 54-36545
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—7

263,151
DESK TOP ELECTRONIC CALCULATOR
Takashi Hirata; Takashi Yomo, both of Yokohama, and Junichi Motoyoshi, Funabashi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 3, 1980, Ser. No. 126,354
Claims priority, application Japan, Sep. 4, 1979, 54-36987
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—7

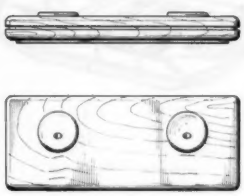
263,152
POSTAL CODING MACHINE
Jean-Marcel Bergerioux, Presles, France, assignor to Hotchkiss-Brandt Sogeme H.B.S. (Societe Anonyme), Paris, France
Filed Aug. 7, 1979, Ser. No. 64,619
Claims priority, application France, Feb. 12, 1979, 79 77293
Term of patent 14 years
Int. Cl. D18—*02*
U.S. Cl. D18—13



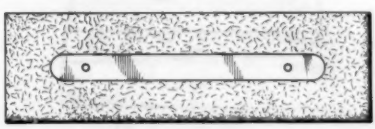
263,153
CONTROLLED LETTERING SCRIBER
Allister L. Baker, Denville, N.J., assignor to Keuffel & Esser Company, Morristown, N.J.
Filed May 23, 1980, Ser. No. 152,931
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—41



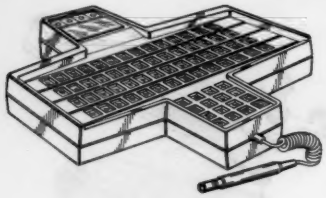
263,154
BASE FOR A DESK SET
Clayton A. Laughlin, Minneapolis, Minn., assignor to Ketcham & McDougall, Inc., Roseland, N.J.
Filed Jul. 25, 1979, Ser. No. 60,521
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—84



263,155
BASE FOR A DESK SET
William Macowski, Caldwell, N.J., assignor to Ke'cham & McDougall, Inc., Roseland, N.J.
Filed Jul. 18, 1979, Ser. No. 58,998
Term of patent 14 years
Int. Cl. D19—*99*
U.S. Cl. D19—99

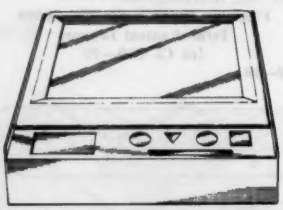


263,156
ELECTRONIC GAME HOUSING
Paul J. Ishikawa, Hermosa Beach, Calif., assignor to California R & D Center, Culver City, Calif.
Filed Feb. 19, 1980, Ser. No. 122,368
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—13



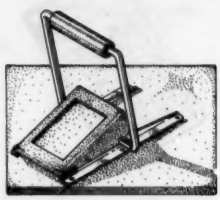
263,157
ELECTRONIC GAME HOUSING
Masao Takagi, Tokyo, Japan, assignor to Takatoku Toys Company, Limited, Tokyo, Japan
Filed May 5, 1980, Ser. No. 146,822
Claims priority, application Japan, Nov. 22, 1979, 54-49056
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—13

263,158
EDUCATIONAL TOY DESK
Peter M. Craig, Stamford, England, assignor to Peter Pan Playthings Limited, Peterborough, England
Filed Feb. 14, 1979, Ser. No. 11,974
Claims priority, application United Kingdom, Aug. 22, 1978, 986033
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—59



263,159
PUSHING TOY VEHICLE
Shinroku Nakao, Yokohama; Yoshiyasu Ishii, Tokyo; Taira Hanashima, Tokyo, and Yukio Ishige, Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed Jan. 5, 1979, Ser. No. 1,089
Claims priority, application Japan, Aug. 9, 1978, 53-33662
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—134

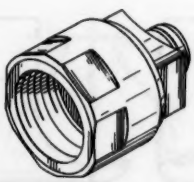
263,160
PHYSICAL EXERCISER
Charles V. Blackmon, P.O. Box 13311, Wichita, Kans. 67213
Filed Sep. 24, 1979, Ser. No. 77,944
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—195



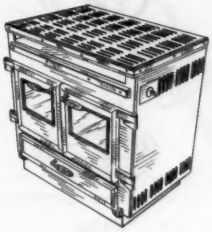
263,161
BASKETBALL BACKBOARD
Jose L. Quinones, 2314 Scranton Rd., Cleveland, Ohio 44113
Filed Mar. 20, 1979, Ser. No. 22,230
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—201

263,162
ARCHERY BOW HANDLE
William R. Stewart, Gainesville, Fla., assignor to Victor United, Inc., Chicago, Ill.
Filed Dec. 12, 1979, Ser. No. 102,879
Term of patent 14 years
Int. Cl. D22—*02*
U.S. Cl. D22—5

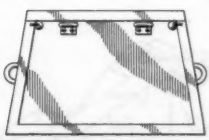
263,163
OUTLET FITTING FOR A PIPE
Jgrl R. Olde, Laduvägen 4, Uppsala, Sweden
Filed Oct. 18, 1978, Ser. No. 952,327
Claims priority, application Sweden, Apr. 19, 1978, 1100
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—40

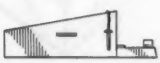


263,164
STOVE
Thomas Barnett, Carleton Place, Canada, assignor to Findlay Products Division of Rexcorp Management Ltd., Kitchener, Canada
Filed Sep. 24, 1979, Ser. No. 78,471
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



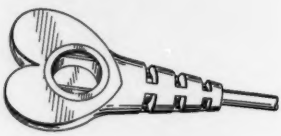
263,165
FIREPLACE INSERT ASH CAN
Gary H. Day, 5701-27th Ave., Sacramento, Calif. 95820
Filed Dec. 28, 1979, Ser. No. 108,094
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—131



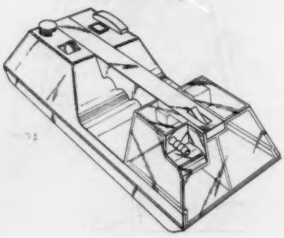


263,166
MOUTHPIECE
John A. Bushman, London, England, assignor to Ferraris Development and Engineering Company Limited, London, England
Filed Apr. 30, 1979, Ser. No. 34,537
Claims priority, application United Kingdom, Oct. 30, 1978, 987051/78
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—17

263,167
ELECTROCARDIOGRAM LEAD TERMINAL
Robert D. Stone, 3050 S. Bristol #8N, Santa Ana, Calif. 92704
Filed Mar. 14, 1979, Ser. No. 20,272
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—29



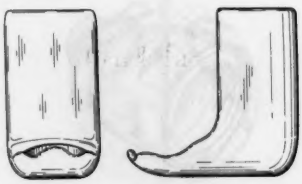
263,168
PORTABLE DRAINAGE DEVICE
Leonard D. Kurtz, Woodmere, and Robert E. Bidwell, Melville, both of N.Y.
Filed Sep. 12, 1979, Ser. No. 74,756
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—51



263,169
INCONTINENCE PAD FOR MEN
Christina I. E. Larko, Hovas, Sweden, assignor to Molnlycke AB, Goteborg, Sweden
Filed Sep. 18, 1979, Ser. No. 76,744
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—51

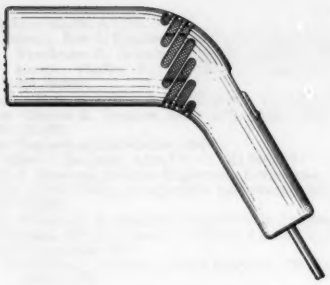
263,170
FLASHLIGHT
Anthony Maglica, 219 Armsley Sq., Ontario, Calif. 91762
Filed Nov. 26, 1979, Ser. No. 97,527
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D26—49

263,171
FILTER ASH TRAY
Connie M. Lee, 12811 E. 13th Pl., Tulsa, Okla. 74128
Filed Dec. 13, 1979, Ser. No. 103,184
Term of patent 14 years
Int. Cl. D27—*03*
U.S. Cl. D27—16

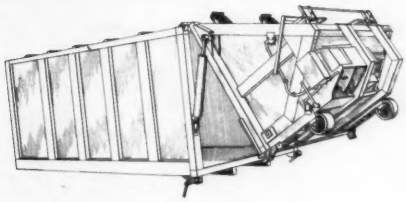


263,172
PHARMACEUTICAL TABLET
Kenneth J. Payne, Greenwich, Conn., assignor to Pfizer Inc., New York, N.Y.
Filed Sep. 18, 1979, Ser. No. 76,589
Term of patent 14 years
Int. Cl. D28—*01*
U.S. Cl. D28—2

263,173
HAIR DRYER
John Wistrand, New Canaan, Conn., assignor to Clairol Incorporated, New York, N.Y.
Filed Jan. 25, 1980, Ser. No. 115,431
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—13



263,174
FRONT DUMP REFUSE COMPACTOR
Darryl G. Bettencourt, Lodi, and Charles F. Dietz, Rio Vista, both of Calif., assignors to Blackwelders, Rio Vista, Calif.
Filed Dec. 26, 1979, Ser. No. 107,071
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D34—3



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 23RD DAY OF FEBRUARY, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A/S Akers Mek. Verksted: *See*—
Hovind, Leif; and Fladby, Tron-Halvard, 4,316,725, Cl. 55-41.000.

Abbott, Bernard J.; and Berry, Dennis R., to Eli Lilly and Company. Enzymatic deesterification of cephalosporin methyl esters. 4,316,955, Cl. 435-47.000.

Abbott Laboratories: *See*—
Genese, Joseph N.; and Muetterties, Andrew J., 4,316,460, Cl. 128-214.00R.
Nara, Takashi; Okachi, Ryo; Kawamoto, Isao; Sato, Tomoyasu; and Oka, Tetsuo, 4,316,957, Cl. 435-119.000.

Abe, Hiroshi: *See*—
Kawai, Mituo; Fujita, Takashi; Shirai, Hideo; Nakagawa, Masatoshi; and Abe, Hiroshi, 4,316,743, Cl. 75-124.000.

Acebo, William F.: *See*—
Wolf, Irving W.; Stafford, Michael K.; Kahan, Hillard M.; Acebo, William F.; Scott, Lawrence M.; and Lee, Yu C., 4,316,738, Cl. 75-0.5BA.

Acker, William F., to Honeywell Inc. Signal monitor system. 4,317,080, Cl. 328-151.000.

Ackerman, Morris, to Singer Company, The. Maintenance training device. 4,316,720, Cl. 434-224.000.

Adamek, Rado il: *See*—
Kupf, Lubomir; Adamek, Radomil; and Mursec, Mirko, 4,316,803, Cl. 210-455.000.

Adamer, Siegfried, to Societe d'Assistance Technique pour Produits Nestle S.A. Treatment of a coffee extract. 4,316,916, Cl. 426-329.000.

Adams, Joan M.; Shoaf, Myron B.; Bochmann, Carl E.; and Basile, Peter A., to General Foods Corporation. Carbonated beverage container. 4,316,409, Cl. 99-275.000.

Adams, John T.; Kompelien, Arlon D.; Nelson, Marvin D.; and Pinckaers, B. Hubert, to Honeywell Inc. Energy saving thermostat. 4,316,577, Cl. 236-46.00R.

Adell, Robert, to U.S. Product Development Co. Door edge guard. 4,316,348, Cl. 49-462.000.

Adria Laboratories, Inc.: *See*—
Alam, Abu S.; and Eichel, Herman J., 4,316,884, Cl. 424-19.000.

Aesculap-Werke Aktiengesellschaft, vormals Jetter & Scheerer: *See*—
Braun, Karl; and Wintermantel, Erich, 4,316,470, Cl. 128-346.000.

Agence Nationale de Valorisation de la Recherche: *See*—
Charpak, Georges, 4,317,038, Cl. 250-385.00.

Agence Nationale de Valorisation de la Recherche (ANVAR): *See*—
Atlani, Martial; Loutaty, Roben; Wakselman, Claude; and Yacono, Charles, 4,316,796, Cl. 208-313.000.
Fruman, Daniel; and Tulin, Marshall, 4,316,383, Cl. 73-55.000.

Agency of Industrial Science and Technology, The: *See*—
Kudo, Bosshi; and Yoshioka, Masamichi, 4,316,764, Cl. 156-617.00H.

AGFA-Gevaert Aktiengesellschaft: *See*—
Gernert, Herbert, 4,316,953, Cl. 430-569.000.

Agri-Canvas Inc.: *See*—
Verbeek, John M., 4,316,536, Cl. 198-699.000.

Aiello, Samuel, Jr., to Ilo Engineering, Inc. Combined battery holder and switch. 4,317,161, Cl. 362-103.000.

Air Factors West: *See*—
Lambert, Robert R., 4,316,407, Cl. 98-40.00D.

Air Products and Chemicals, Inc.: *See*—
Ford, Michael E.; and Johnson, Thomas A., 4,316,840, Cl. 260-239.0BC.
Ford, Michael E.; and Johnson, Thomas A., 4,316,841, Cl. 260-239.0BC.

Aktiebolaget Overums Bruk: *See*—
Lindqvist, Rolf E., 4,316,507, Cl. 172-225.000.

Akune, Mikio; and Kinoshita, Yoshiaki, to Nittetu Chemical Engineering Ltd. Method for the combustive treatment of waste fluids containing nitrogen compounds. 4,316,878, Cl. 423-235.000.

Akutsu, Yoji: *See*—
Kita, Hisanao; Karatsu, Yoshinori; Nakazaki, Takamitsu; and Akutsu, Yoji, 4,317,022, Cl. 219-121.0EU.

Alam, Abu S.; and Eichel, Herman J., to Adria Laboratories, Inc. Sustained release pharmaceutical formulation. 4,316,884, Cl. 424-19.000.

Alan I. Gerald Corporation: *See*—
Kahn, Harvey, 4,316,340, Cl. 42-66.000.

Albenberger, Johann: *See*—
Lenz, Wolfgang; Albenberger, Johann; and Knell, Karl, 4,316,631, Cl. 297-284.000.

Alberts, Steven L., to GTE Products Corporation. Voltage monitoring and indicating circuit. 4,317,056, Cl. 307-350.000.

Albright, Jane: *See*—
Gerlock, John L.; Braslaw, Jacob; and Albright, Jane, 4,316,992, Cl. 568-621.000.

Aleinikov, Nikolai A.: *See*—
Zelenov, Petr I.; Usachev, Petr A.; Davydov, Jury V.; Lyakhov, Vyacheslav P.; Zelenova, Irina M.; Aleinikov, Nikolai A.; Sladkovich, Vladlen F.; and Titov, Viktor I., 4,316,542, Cl. 209-39.000.

Alexeev, Boris N. Artificial crystalline lens. 4,316,292, Cl. 3-13.000.

Allen, Charles B. Eyeglass frame with pocket clip. 4,316,654, Cl. 351-155.000.

Allen Engineering Corporation: *See*—
Allen, J. Dewayne, 4,316,715, Cl. 425-456.000.

Allen, J. Dewayne, to Allen Engineering Corporation. Vibratory concrete screed having an adjustable extension bracket. 4,316,715, Cl. 425-456.000.

Allen, William P., Jr.; and Zieg, Benjamin S., to Lockheed Corporation. Conformal HF loop antenna. 4,317,121, Cl. 343-712.000.

Allied Corporation: *See*—
DeCristofaro, Nicholas J.; and Henschel, Claude, 4,316,573, Cl. 228-263.00R.
Sexton, Peter; and DeCristofaro, Nicholas J., 4,316,572, Cl. 228-263.00R.
Tunick, Allen A.; Largman, Theodore; and Sifniades, Stylianos, 4,316,877, Cl. 423-10.000.
Vermeer, Dick C.; and Biron, Raymond J., 4,316,312, Cl. 28-255.000.

Alstad, Sven O.: *See*—
Petersson, Stefan; and Alstad, Sven O., 4,316,709, Cl. 425-174.80E.

Altenschulte, Raymond A., to RCA Corporation. A.C. Power line assembly. 4,317,152, Cl. 361-104.000.

Alvarez, Luis W.; and Schwemin, Arnold J., to Schwem Instruments. Stabilized zoom binocular. 4,316,649, Cl. 350-16.000.

Alvarez, Luis W. Stand alone collision avoidance system. 4,317,119, Cl. 343-112.0CA.

Amacker, Inc.: *See*—
Amacker, Joseph A., 4,316,526, Cl. 182-135.000.

Amacker, Joseph A., to Amacker, Inc. Apparatus for and method of climbing an upright columnar member. 4,316,526, Cl. 182-135.000.

Ambrose, Richard J.: *See*—
Hergenrother, William L.; Schwarz, Richard A.; Ambrose, Richard J.; and Hayes, Robert A., 4,316,967, Cl. 525-111.000.

Amerace Corporation: *See*—
Siebens, Larry N., 4,316,646, Cl. 339-7.000.

American Cyanamid Company: *See*—
Pfeiffer, Ronald E.; and DeMaria, Francesco, 4,316,714, Cl. 425-382.200.

American Electronics, Inc.: *See*—
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American Hospital Supply Corporation: *See*—
Stoneback, W. Keith, 4,316,455, Cl. 128-132.00D.
Stoneback, W. Keith, 4,316,456, Cl. 128-132.00D.

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Bramwell, John S., 4,316,864, Cl. 264-86.000.

American Sterilizer Company: *See*—
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American Sussen Corp.: *See*—
Steiner, Erwin, 4,316,370, Cl. 68-5.00D.

AMF Incorporated: *See*—
Cummins, Donald L., 4,316,534, Cl. 198-345.000.
Lundberg, Duane R., 4,316,608, Cl. 272-117.000.

AMP Incorporated: *See*—
Mosser, Benjamin H., III, 4,317,006, Cl. 178-46.000.

Ampex Corporation: *See*—
Monforte, Frank R.; and Argentina, Giltan M., 4,316,923, Cl. 428-68.000.
Wolf, Irving W.; Stafford, Michael K.; Kahan, Hillard M.; Acebo, William F.; Scott, Lawrence M.; and Lee, Yu C., 4,316,738, Cl. 75-0.5BA.

Anantha, Narasipur G.; and Chang, Augustine W., to International Business Machines Corporation. Method for making a high sheet resistance structure for high density integrated circuits. 4,316,319, Cl. 29-577.00C.

Andersen, Dennis H., to MTS Systems Corporation. Deep drawing press with blanking and draw pad pressure control. 4,316,379, Cl. 72-351.000.

Andersen, Helge H., to Kongskilde Koncernselskab A/S. Implement frame, especially for agricultural machines. 4,316,511, Cl. 172-776.000.

Anthony Manufacturing Company: *See*—
Ray, Charles A.; and Kent, John L., 4,316,579, Cl. 239-123.000.

Antoshkiw, Thomas; Cannalonga, Marco A.; and Guerin, Frank, to Hoffman-La Roche Inc. Stable carotenoid solutions. 4,316,917, Cl. 426-540.000.

Aono, Tadashi: *See*—
Fujimura, Noriaki; Kinoshita, Tsuneo; Aono, Tadashi; Kaku, Takashi; and Tanaka, Yasuya, 4,317,207, Cl. 375-19.000.

Aoto, Teruaki: *See*—
Suzuki, Shunichi; Koba, Yoshinori; Yamada, Yoshiaki; Aoto, Teruaki; Kuno, Yoriyoshi; and Yokota, Masanobu, 4,316,758, Cl. 156-351.000.

Apache Powder Company: *See*—
Baker, James J., 4,316,415, Cl. 102-275.800.

Araki, Kunio: *See*—
Hosoi, Fumio; Sasaki, Takashi; Hagiwara, Miyuki; Kasai, Noboru; Araki, Kunio; and Hirano, Takayuki, 4,316,783, Cl. 204-159.180.

Araseki, Takashi; and Ochiai, Kazuo, to Nippon Electric Co., Ltd. ADPCM System for speech or like signals. 4,317,208, Cl. 375-27.000.

Ardal og Sunndal Verk a.s.: *See*—
Sele, Thorleif, 4,316,788, Cl. 204-243.00M.

Arena, Joseph P. Vertical blind controls. 4,316,493, Cl. 160-168.00R.

Argentina, Giltan M.: *See*—
Monforte, Frank R.; and Argentina, Giltan M., 4,316,923, Cl. 428-68.000.

Arie, Ryosuke: *See*—
Ninomiya, Satoshi; Yamachi, Yasuhiro; Hisano, Katsukuni; Arie, Ryosuke; Kashiwahara, Katsuto; and Kuwashima, Hidesumi, 4,316,362, Cl. 60-646.000.

Arleth, Norman; and Dieterlen, Paul E., to R. A. Jones & Co. Inc. Apparatus for registration and control for a moving web. 4,316,566, Cl. 226-2.000.

Arndt, Otto; and Tronich, Wolfgang, to Hoechst Aktiengesellschaft. N-Nitroaryl-N-halosulfonyl ureas. 4,316,861, Cl. 260-543.00F.

Arwood, Phillip C.: *See*—
Tallent, Othar K.; Mailen, James C.; Bell, Jimmy T.; and Arwood, Phillip C., 4,316,776, Cl. 204-1.500.

Asahi Glass Company Ltd.: *See*—
Eguchi, Tsukasa; and Morozumi, Mituharu, 4,316,941, Cl. 428-421.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Ohmura, Kaoru; Shibasaki, Ichiro; and Kimura, Takeo, 4,316,974, Cl. 525-422.000.

Aschauer, George R., to Twin Disc, Incorporated. Propulsion system for submarine. 4,316,722, Cl. 440-74.000.

Assemblers, Inc.: *See*—
Salemink, Willard L., 4,316,336, Cl. 37-67.000.

Astes Components, Ltd.: *See*—
Sidwell, Shawn R., 4,316,429, Cl. 118-504.000.

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Gauthier, Jean, 4,316,587, Cl. 242-75.530.

Athenes, Claude; Meresse, Jean L. J.; and Salle, Jacques E., to Le Materiel Telephonique Thomson-CSF. Modular time-division switching network. 4,317,008, Cl. 179-18.0FC.

Atlani, Martial; Loutaty, Roben; Wakselman, Claude; and Yacono, Charles, to Compagnie Francaise de Raffinage; and Agence Nationale de Valorisation de la Recherche (ANVAR). Process for the separation of dienic and/or aromatic hydrocarbons present in hydrocarbon fractions. 4,316,796, Cl. 208-313.000.

Atlantic Richfield Company: *See*—
Evans, Hugh W., 4,316,682, Cl. 406-187.000.
Mooi, John, 4,316,795, Cl. 208-120.000.
Wakefield, G. Felix; and Bender, David L., 4,316,497, Cl. 164-479.000.

Atlas Copco AB: *See*—
Jysky, Goran H., 4,316,514, Cl. 175-66.000.

Attinello, John S. Apparatus for simulating interference transmissions. 4,317,214, Cl. 455-1.000.

Auer, John H., Jr.; and Birnbaum, David, to General Signal Corporation. Phantom eliminator for signal lights. 4,316,652, Cl. 350-276.00R.

Aufdermarsh, Carl A., Jr., to Du Pont de Nemours, E. I., and Company. Stabilized fluoroelastomer compositions. 4,316,836, Cl. 260-42.210.

Automobiles Peugeot: *See*—
Bertrand, Bernard, 4,316,437, Cl. 123-90.180.
Zaccariotto, Moise, 4,316,633, Cl. 297-331.000.

Ayerst, McKenna and Harrison, Inc.: *See*—
Rakhit, Sumanas, 4,316,885, Cl. 424-122.000.

B. F. Goodrich Company, The: *See*—
Kuster, Howard L., 4,316,570, Cl. 226-176.000.

Babb, Albert L., to Biomedics, Inc. Body fluid drainage device. 4,316,466, Cl. 128-278.000.

Bagdy, Daniel: *See*—
Bajusz, Sandor; Szell nee Hasenohrl, Erzsebet; Barabas, Eva; and Bagdy, Daniel, 4,316,889, Cl. 424-177.000.

Bailey Burners, Inc.: *See*—
Bailey, Frank W., 4,316,434, Cl. 122-20.00B.

Bailey, Frank W., to Bailey Burners, Inc. Method and apparatus for improving heat transfer. 4,316,434, Cl. 122-20.00B.

Bailey, James R.; and Herron, John R., to Switchcraft, Inc. Miniature audio connector. 4,316,647, Cl. 339-91.00R.

Bailey, Jesse M., Jr.: *See*—
Pobst, David F., Jr.; and Bailey, Jesse M., Jr., 4,316,881, Cl. 423-456.000.

Bajusz, Sandor; Szell nee Hasenohrl, Erzsebet; Barabas, Eva; and Bagdy, Daniel, to Richter Gedeon Vegyeszeti Gyar Rt. Novel peptidyl-arginine aldehyde derivatives and process for the preparation thereof. 4,316,889, Cl. 424-177.000.

Baker, James J., to Apache Powder Company. Detonating cord with flash-suppressing coating. 4,316,415, Cl. 102-275.800.

Baker, John W., to Siloam, Inc. Filtering device for an injection device. 4,316,462, Cl. 128-218.00N.

Baker, Randy S.; and Eckmann, Gerald C., to BJ-Hughes Inc. Check-/relief valve for an inflatable packer system. 4,316,504, Cl. 166-53.000.

Baldi, Giuliano: *See*—
Manini, Benito; Furia, Edoardo; Stefani, Eugenio; Baldi, Giuliano; Barracchia, Pasquale; Cacciapuoti, Beniamino; and Mattei, Bruno, 4,316,488, Cl. 139-13.00R.

Balducci, Luigi: *See*—
Rustioni, Massimo; and Balducci, Luigi, 4,316,746, Cl. 106-288.00B.

Baldwin, Naomi G. Bathtub. 4,316,294, Cl. 4-538.000.

Balog, George: *See*—
Sander, Robert K.; Balog, George; and Seegmiller, Emma T., 4,317,087, Cl. 372-57.000.

Barabas, Eva: *See*—
Bajusz, Sandor; Szell nee Hasenohrl, Erzsebet; Barabas, Eva; and Bagdy, Daniel, 4,316,889, Cl. 424-177.000.

Barberis, Giulio; and Pazzaglia, Daniele, to CSELT-Centro Studi e Laboratori Telecommunicazioni S.p.A. Method of and device for reducing speech-reproduction irregularities in packet-switching telecommunication systems. 4,317,195, Cl. 370-94.000.

Barracchia, Pasquale: *See*—
Manini, Benito; Furia, Edoardo; Stefani, Eugenio; Baldi, Giuliano; Barracchia, Pasquale; Cacciapuoti, Beniamino; and Mattei, Bruno, 4,316,488, Cl. 139-13.00R.

Bartell, Frederick O. Blackbody simulator with uniform emissivity. 4,317,042, Cl. 250-493.000.

Barth, Bruce P.; Johnson, Robert N.; Mayer, Walter P.; and Pinkston, Bruce H. W., to Union Carbide Corporation. Apparatus for producing a curable polyurethane froth. 4,316,875, Cl. 422-133.000.

Barthelme, Julius A., to Frederick Electronics Corp. FSK Tone generator circuit. 4,317,209, Cl. 375-62.000.

Basile, Peter A.: *See*—
Adams, Joan M.; Shoaf, Myron B.; Bochmann, Carl E.; and Basile, Peter A., 4,316,409, Cl. 99-275.000.

Batcho, Andrew D.; Hengartner, Urs O.; Leimgruber, Willy; Scott, John W.; and Valentine, Donald, Jr., to Hoffmann-La Roche Inc. Pyrroles and pyrrolidines. 4,316,847, Cl. 260-326.460.

Battelle Memorial Institute: *See*—
Spinosa, Emilio D.; and Ensminger, Dale, 4,316,734, Cl. 55-135.000.

Battigelli, Jean A.; and Bouquet, Francois, to Saint-Gobain Industries. Method for heat treatment of fibrous mats. 4,316,865, Cl. 264-109.000.

Baxter, Donald J.; and Kolin, George J., to Columbia Machine, Inc. Variable array can palletizer. 4,316,693, Cl. 414-59.000.

Baxter Travenol Laboratories, Inc.: *See*—
Cullis, Herbert M.; and Gutierrez, Luiz F., 4,316,576, Cl. 233-26.000.

Bayer AG: *See*—
Wieder, Wolfgang; and Witte, Josef, 4,316,820, Cl. 252-431.00N.

Bayer Aktiengesellschaft: *See*—
Fuchs, Rainer; Hammann, Ingeborg; and Stendel, Wilhelm, 4,316,913, Cl. 424-304.000.
Fuchs, Rainer; Maurer, Fritz; Priesnitz, Uwe; and Riebel, Hans-Jochem, 4,316,994, Cl. 568-639.000.
Grotkopp, Detlef; Wedemeyer, Karlfried; Brandes, Wilhelm; Scheinpflug, Hans; and Roessler, Peter, 4,316,912, Cl. 424-300.000.
Idel, Karsten; Serini, Volker; Freitag, Dieter; and Fengler, Gerd, 4,316,980, Cl. 528-199.000.
Kranz, Eckart; Kramer, Wolfgang; Buchel, Karl H.; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,316,932, Cl. 424-269.000.
Schenk, Wolfgang; Blank, Heinz U.; Hagedorn, Ferdinand; and Evertz, Werner, 4,316,862, Cl. 260-543.00R.
Stetter, Jorg; Homeyer, Bernhard; Hammann, Ingeborg; and Elbe, Hans-Ludwig, 4,316,910, Cl. 424-298.000.

Bayerische Motoren Werke AG: *See*—
Huber, Manfred, 4,317,106, Cl. 340-52.00F.

Bayers, Jon H. Flexible intraocular lens. 4,316,293, Cl. 3-13.000.

Bazarov, Georgy P.; Kovbasjuk, Valentin I.; Kufa, Emma N.; and Medin, Stanislav A. Channel of series-type magnetohydrodynamic generator. 4,317,057, Cl. 310-11.000.

BBC Brown, Boveri & Company Limited: *See*—
de Mesmaeker, Ivan; and Muller, Peter, 4,317,151, Cl. 361-69.000.

Beach, Wayne H.: *See*—
Taylor, Jack A.; Beach, Wayne H.; and Weyant, Raymond C., Jr., 4,316,636, Cl. 299-92.000.

Beatrice Foods Co.: *See*—
Whitfield, Carroll J., 4,316,508, Cl. 172-271.000.

Becham Group Limited: *See*—
Taskis, Charles B., 4,316,886, Cl. 424-80.000.

Becker, Werner; and Schwobel, Richard, to Esselte Pendaflex Corporation. Hand appliance for issuing or applying self-adhering labels. 4,316,759, Cl. 156-387.000.

Beckermann, Harald: *See*—
Hartig, Alfred; and Beckermann, Harald, 4,317,167, Cl. 364-185.000.

Beckman Instruments, Inc.: *See*—
Frankland, Roger A., 4,317,062, Cl. 313-175.000.

Beecham Group Limited: *See*—
Markwell, Roger E., 4,316,899, Cl. 424-250.000.

Beggs, Donald; and Scarlett, John C., to Midrex Corporation. Method for producing molten iron. 4,316,739, Cl. 75-40.000.

Begunov, Petr M.: *See*—
Ragoza, Igor V.; Dalidovich, Alexandr S.; Begunov, Petr M.; Vasiljuk, Petr J.; Tonikian, Robert T.; Tonikian, Dina N.; and Makarenko, Alexandr V., 4,316,369, Cl. 66-81.000.

Beier, Stefan; and Gmeinder, Hermann, to Kaltenbach & Voight GmbH & Co. Arrangement for determining the removal of work tools and/or drive elements from receiving locations, particularly for a dental treatment location. 4,317,112, Cl. 340-568.000.
Beigel, Michael L.: *See—*
Tavel, Donald L.; and Beigel, Michael L., 4,316,401, Cl. 84-1.010.
Belart, Juan, to ITT Industries, Inc. Control device for hydraulic brake systems incorporating antiskid control apparatus. 4,316,642, Cl. 303-116.000.
Belisomi, Pietro, to Indesit Industria Elettrodomestici Italiana S.p.A. Circuit arrangement for tuning into one of a number of radioelectric signals. 4,317,226, Cl. 455-174.000.
Bell, Donald: *See—*
Coe, Charles D.; Bell, Donald; and Bray, Michael R., 4,317,045, Cl. 250-554.000.
Bell & Howell Company: *See—*
Grant, Frederic F.; and Sarkisian, Nancy L., 4,316,568, Cl. 226-118.000.
Bell, Jimmy T.: *See—*
Tallent, Othar K.; Mailen, James C.; Bell, Jimmy T.; and Arwood, Phillip C., 4,316,776, Cl. 204-1.500.
Bell, Robert R.; and Christians, Scott T., to Motorola, Inc. Transceiver/receiver information multiplexing system. 4,317,222, Cl. 455-77.000.
Bell Telephone Laboratories, Incorporated: *See—*
Bosch, Fridolin L.; Dybwad, Gay L.; and Swan, Clarence B., 4,317,236, Cl. 455-608.000.
Brown, John F.; and Stanton, Robert M., 4,316,920, Cl. 427-96.000.
Cohen, Richard L.; and Meek, Ronald L., 4,317,035, Cl. 250-272.000.
Joel, Amos E., Jr., 4,317,193, Cl. 370-54.000.
Thiel, Ferdinand A., 4,316,765, Cl. 156-626.000.
Yahalom, Joseph, 4,316,779, Cl. 204-29.000.
Young, Ernst H., Jr., 4,317,051, Cl. 307-246.000.
Bellasio, Aldo; and Brusa, Giulio, to Industrie Pirelli Societa per Azioni. Extrusion press with method and apparatus for removing unused metal from extruder piston. 4,316,378, Cl. 72-268.000.
Beloit Corporation: *See—*
Dahl, Carl B., 4,316,769, Cl. 162-360.00R.
Goddard, Denis A., 4,316,768, Cl. 162-336.000.
Belokin, Paul, Jr. Aluminum container. 4,316,551, Cl. 220-1.00R.
Ben-Dov, Oded, to RCA Corporation. Duopyramid circularly polarized broadcast antenna. 4,317,122, Cl. 343-798.000.
Bender, David L.: *See—*
Wakefield, G. Felix; and Bender, David L., 4,316,497, Cl. 164-479.000.
Bendix Corporation, The: *See—*
Taig, Alistair G., 4,316,519, Cl. 180-148.000.
Benoun, Samie; and Lacy, Charles R., to Sunkist Growers, Inc. Beverage dispenser with removable tank connection means. 4,316,557, Cl. 222-129.100.
Bentley, W. Ferrel; Luedtke, Arthur; and Scott, James E., to United States of America, Federal Communications Commission. Sector scan ADF system. 4,317,120, Cl. 343-120.000.
Berghell, Robin C. Mailing package for facilitating automatic sorting of mail. 4,317,030, Cl. 235-489.000.
Bergmann, Eduard; and Bonczek, Wolfgang, to Leopold Kostal, Firma. Precision resistor for measurement purposes. 4,317,104, Cl. 338-330.000.
Bergna, Horacio E., to Du Pont de Nemours, E. I., and Company. High ratio silicate foundry sand binders. 4,316,744, Cl. 106-38.350.
Berry, Dennis R.: *See—*
Abbott, Bernard J.; and Berry, Dennis R., 4,316,955, Cl. 435-47.000.
Berthou, Claude: *See—*
Bouvet, Jean M.; Berthou, Claude; and Jallas, Michel, 4,316,599, Cl. 251-129.000.
Bertoia, Val O. Fluid-driven turbine with speed regulation. 4,316,698, Cl. 416-11.000.
Bertrand, Bernard, to Automobiles Peugeot. Acceleration controlling device for an automobile vehicle. 4,316,437, Cl. 123-90.180.
Beskin, Gerald S., to Therapac Division, Krelitz Industries, Inc. Portable blood sample temperature control system. 4,316,473, Cl. 128-763.000.
Besson, Raymond, to Etat Francais. Acceleration and temperature compensated piezoelectric bi-resonator. 4,317,059, Cl. 310-361.000.
Beta Industries, Inc.: *See—*
Corwin, Richard R.; and Moorman, Stephen L., 4,316,670, Cl. 356-349.000.
Bi-Modal Corporation: *See—*
Cripe, Christopher A., 4,316,640, Cl. 303-20.000.
Hindin, Eugene; Cripe, Alan R.; and Cripe, Christopher A., 4,316,418, Cl. 105-215.00C.
Binzer, Norbert: *See—*
Guido, Jurgen; and Binzer, Norbert, 4,316,425, Cl. 114-141.000.
Biomedics, Inc.: *See—*
Babb, Albert L., 4,316,466, Cl. 128-278.000.
Birnbaum, David: *See—*
Auer, John H., Jr.; and Birnbaum, David, 4,316,652, Cl. 350-276.00R.
Biron, Raymond J.: *See—*
Vermeer, Dick C.; and Biron, Raymond J., 4,316,312, Cl. 28-255.000.
BJ-Hughes Inc.: *See—*
Baker, Randy S.; and Eckmann, Gerald C., 4,316,504, Cl. 166-53.000.
Blachford, John, to H. L. Blachford, Limited. Manufacture of metallic soaps. 4,316,852, Cl. 260-414.000.
Black & Decker Inc.: *See—*
George, William A., 4,316,685, Cl. 409-182.000.
Saar, David A.; and Bradus, Robert, 4,317,176, Cl. 364-474.000.
Blackshaw, Andrew L.: *See—*
Sanborn, David M.; and Blackshaw, Andrew L., 4,316,502, Cl. 165-140.000.
Blair, Charles M., Jr., to Magna Corporation. Method for breaking petroleum emulsions and the like using micellar solutions of thin film spreading agents comprising an acylated polyether polyol. 4,316,808, Cl. 252-8.55D.
Blais, Marcel H.: *See—*
Corna, John F.; and Blais, Marcel H., 4,316,571, Cl. 228-173.00C.
Blalock, Sherman S., to Cook, Troy L.; Swisher, William C.; and Tiger, Mose. Electro-magnetic reciprocating engine. 4,317,058, Cl. 310-24.000.
Blank, Heinz U.: *See—*
Schenk, Wolfgang; Blank, Heinz U.; Hagedorn, Ferdinand; and Evertz, Werner, 4,316,862, Cl. 260-543.00R.
Blasinachim S.p.A: *See—*
Bonaldi, Antonio; and Molinari, Egidio, 4,316,848, Cl. 260-397.100.
Blasinachim S.p.A.: *See—*
Bonaldi, Antonio; and Molinari, Egidio, 4,316,849, Cl. 260-397.100.
Blaszkowski, Henry. Windshield wiper control system. 4,317,073, Cl. 318-483.000.
Blickensderfer, John R.: *See—*
Pacala, Luba A.; and Blickensderfer, John R., 4,316,827, Cl. 260-17.200.
Blount, David H. Process for the production of cellulose-silicate products. 4,316,745, Cl. 106-287.340.
Bocard, Christian; Delacour, Jacques; and Renault, Philippe, to Institut Francais du Petrole. Method and system for the continuous cleaning of underwater beds. 4,316,804, Cl. 210-671.000.
Bochmann, Carl E.: *See—*
Adams, Joan M.; Shoaf, Myron B.; Bochmann, Carl E.; and Basile, Peter A., 4,316,409, Cl. 99-275.000.
Bock, Jan: *See—*
Makowski, Henry S.; Lundberg, Robert D.; and Bock, Jan, 4,316,828, Cl. 260-23.50A.
Bodai, Conrad A., to Sontek Industries, Inc. Apparatus for fragmenting fluid fuel to enhance exothermic reactions. 4,316,580, Cl. 239-466.000.
Boehringer Ingelheim KG: *See—*
Wetzel, Bernd; Waitun, Eberhard; Maier, Roland; Rueter, Wolfgang; Lechner, Uwe; and Goeth, Hans, 4,316,898, Cl. 424-246.000.
Boeing Company, The: *See—*
Scarpati, Thomas S.; and Ford, Robert J., 4,316,701, Cl. 416-226.000.
Bohlen, Peter: *See—*
Guillemin, Roger C. L.; Ling, Nicholas C.; Esch, Fred S.; Bohlen, Peter; and Brazeau, Paul E., Jr., 4,316,891, Cl. 424-177.000.
Boivin, Bernard. Self-propelling and steering attachment for a wheelchair. 4,316,616, Cl. 280-289.0WC.
Bollag, Werner; and Wyss, Pierre-Charles, to Hoffmann-La Roche Inc. Neoplasmic compounds: sugar esters and glycosides. 4,316,983, Cl. 536-4.000.
Bolt Associates, Inc.: *See—*
Chelminski, Stephen V., 4,316,521, Cl. 181-114.000.
Bolton, Theodore S.; and Lang, Richard D., to Carrier Corporation. Damper assembly for use with an air conditioning system. 4,316,408, Cl. 98-41.00R.
Bonaldi, Antonio; and Molinari, Egidio, to Blasinachim S.p.A. Process for the purification of ursodeoxycholic acid. 4,316,848, Cl. 260-397.100.
Bonaldi, Antonio; and Molinari, Egidio, to Blasinachim S.p.A. Process for preparing a crystalline polymorphous type of chenodeoxycholic acid. 4,316,849, Cl. 260-397.100.
Bonczek, Wolfgang: *See—*
Bergmann, Eduard; and Bonczek, Wolfgang, 4,317,104, Cl. 338-330.000.
Boretti, Napoleon P. Silencer for gas discharge devices. 4,316,523, Cl. 181-226.000.
Borg-Warner Corporation: *See—*
Erth, Richard A., 4,317,074, Cl. 318-808.000.
Borrod, Guy: *See—*
Guigues, Francois; Peris Y Saborit, Gilles; and Borrod, Guy, 4,316,737, Cl. 71-88.000.
Borsody, Laszlo: *See—*
Somos, Andras; Turi, Istvan; Zatyko, Ferenc; Gyuros, Janos; and Borsody, Laszlo, 4,316,450, Cl. 126-432.000.
Bosch, Fridolin L.; Dybwad, Gay L.; and Swan, Clarence B., to Bell Telephone Laboratories, Incorporated. Laser digital transmitter. 4,317.236, Cl. 455-608.000.
Boschma, Klaas M.: *See—*
Dekker, Cornelis B.; and Boschma, Klaas M., 4,317,210, Cl. 375-76.000.
Bosso, Joseph F.: *See—*
Buchwalter, Stephen L.; Bosso, Joseph F.; and Christenson, Roger M., 4,316,784, Cl. 204-181.00C.
Botte, Anthony J.; Hubbard, James H.; Robbins, Wayne E.; and Spivey, Paul R., to International Business Machines Corporation. Collator error recovery. 4,317,203, Cl. 371-60.000.
Boubouleix, Albert, to Thomson-CSF. Broad-band passive ring mixer. 4,317,230, Cl. 455-319.000.

Boulanger, Henry J.; and Gouin, Philip R., to Texas Instruments Incorporated. Readily mountable thermostat. 4,317,100, Cl. 337-347.000.
Bouquet, Francois: *See*—
Battigelli, Jean A.; and Bouquet, Francois, 4,316,865, Cl. 264-109.000.
Bout, Willem J. F., to U.S. Philips Corporation. Luminaire for an electric lamp. 4,317,163, Cl. 362-362.000.
Bouvet, Jean M.; Berthou, Claude; and Jallas, Michel, to Regie Nationale des Usines Renault. Servo-control valve. 4,316,599, Cl. 251-129.000.
Bova, Anthony J.: *See*—
Price, William A., 4,316,489, Cl. 141-1.000.
Bowden, Donald R.; and Novell, Bruce J., to Solar Unlimited, Inc. Heat exchanger with leakage collector. 4,316,501, Cl. 165-70.000.
Bowen, Robert F., to Raytheon Company. Microwave steamer. 4,317,017, Cl. 219-10.55E.
Boyd, William M., to RCA Corporation. Bias adjustment responsive to signal power. 4,317,083, Cl. 330-296.000.
Boys, John T.: *See*—
Kibblewhite, Ian E.; Boys, John T.; and Tambini, Angelo L., 4,316,512, Cl. 173-12.000.
Bozon, Alfred; Koberstein, Edgar; Pletka, Hans-Dieter; and Voelker, Herbert, to Degussa Aktiengesellschaft. Method of manufacturing a monolithic metallic matrix coated with a catalysis promoting metal oxide. 4,316,823, Cl. 252-465.000.
Bradford, Fairey S.: *See*—
Stokes, W. Fred; Bradford, Fairey S.; and Strobel, Nancy S., 4,316,611, Cl. 273-85.00D.
Bradshaw, John: *See*—
Oxford, Alexander W.; Bradshaw, John; and Coates, Ian H., 4,316,907, Cl. 424-275.000.
Bradus, Robert: *See*—
Saar, David A.; and Bradus, Robert, 4,317,176, Cl. 364-474.000.
Bramwell, John S., to American Standard Inc. Method and apparatus for slip casting toilet bowls. 4,316,864, Cl. 264-85.000.
Branch, Geoffrey H.: *See*—
Hodgkinson, Joseph B.; and Branch, Geoffrey H., 4,316,565, Cl. 225-99.000.
Brand, Derek A.; and Brand, Derek R. Spur track accessory operation. 4,316,346, Cl. 46-212.000.
Brand, Derek R.: *See*—
Brand, Derek A.; and Brand, Derek R., 4,316,346, Cl. 46-212.000.
Brandes, Wilhelm: *See*—
Grotkopp, Detlef; Wedemeyer, Karlfried; Brandes, Wilhelm; Scheinpflug, Hans; and Roessler, Peter, 4,316,912, Cl. 424-300.000.
Kranz, Eckart; Kramer, Wolfgang; Buchel, Karl H.; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,316,932, Cl. 424-269.000.
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Braun, Karl; and Wintermantel, Erich, to Aesculap-Werke Aktiengesellschaft, vormals Jetter & Scheerer. Approximator for anastomotic surgery. 4,316,470, Cl. 128-346.000.
Brauning, Egon, to Protoned BV. Ergonomic chair. 4,316,632, Cl. 297-291.000.
Brave Trading Limited: *See*—
Chatelain, Michel, 4,316,308, Cl. 24-335.000.
Braverman, Milton; and Zink, Leonard, to Medi-Dose, Inc. Moisture impervious cover sheet for unit dose packaging. 4,316,541, Cl. 206-532.000.
Bray, Michael R.: *See*—
Coe, Charles D.; Bell, Donald; and Bray, Michael R., 4,317,045, Cl. 250-554.000.
Brazdil, James F.: *See*—
Grasselli, Robert K.; Suresh, Dev D.; Brazdil, James F.; and Ratka, Frances I., 4,316,855, Cl. 260-465.300.
Brazeau, Paul E., Jr.: *See*—
Guillemin, Roger C. L.; Ling, Nicholas C.; Esch, Fred S.; Bohlen, Peter; and Brazeau, Paul E., Jr., 4,316,891, Cl. 424-177.000.
Brazell, James: *See*—
Hughes, Robert D.; and Brazell, James, 4,316,533, Cl. 194-4.00C.
Brems, John H.; and Graham, James T., to F. Jos. Lamb Company. Workpiece storage system. 4,316,535, Cl. 198-473.000.
Brenner, Walter: *See*—
Rugg, Barry A.; and Brenner, Walter, 4,316,747, Cl. 127-37.000.
British Steel Corporation: *See*—
Spenceley, Gene D., 4,316,496, Cl. 164-477.000.
Broadhurst, Michael J.; Hassall, Cedric H.; and Thomas, Gareth J., to Hoffmann-La Roche Inc. Cyclic compounds. 4,316,985, Cl. 549-39.000.
Brooks, Ronald E.: *See*—
Slusarczuk, George M. J.; and Brooks, Ronald E., 4,316,938, Cl. 428-403.000.
Brown, Daniel P., to Motorola, Inc. Narrow band television transmission system. 4,317,130, Cl. 358-108.000.
Brown, Derek. Control apparatus for drive transmissions. 4,316,395, Cl. 74-866.000.
Brown, Harvey A., to Minnesota Mining and Manufacturing Company. Thermolabile acutance dyes. 4,316,984, Cl. 546-165.000.
Brown, John D.: *See*—
Mac Lean, John P.; Cantwell, J. Edward; Brown, John D.; and Hoy, Harold D., 4,316,729, Cl. 55-459.00R.
Brown, John F.; and Stanton, Robert M., to Bell Telephone Laboratories, Incorporated. Thick film resistor circuits. 4,316,920, Cl. 427-96.000.
Brown, Richard E.; and Unangst, Paul C. Indolopyrone tetrazoles and carboxamidotetrazoles having antiallergic activity. 4,316,904, Cl. 424-269.000.
Brucker, William S. Weed cutting apparatus. 4,316,325, Cl. 30-276.000.
Bruckman, Katarzyna, to Tioxide Group Limited. Method for the production of catalysts. 4,316,821, Cl. 252-461.000.
Brunelle, Daniel J., to General Electric Company. Polycarbonate transesterification. 4,316,981, Cl. 528-199.000.
Brusa, Giulio: *See*—
Bellasio, Aldo; and Brusa, Giulio, 4,316,378, Cl. 72-268.000.
Bryan, T. James; Hartman, George W.; and Wilson, Arthur G., to Exxon Research & Engineering Co. Method and apparatus for facsimile sheet handling. 4,317,138, Cl. 358-291.000.
Bryksi, Jan: *See*—
Winkler, Jiri; Cibulka, Josef; Bryksi, Jan; Jelinek, Richard; Krtek, Jan; Mickal, Vladimir; Hlousek, Jaroslav; and Kondr, Milan, 4,317,166, Cl. 363-138.000.
Buchel, Karl H.: *See*—
Kranz, Eckart; Kramer, Wolfgang; Buchel, Karl H.; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,316,932, Cl. 424-269.000.
Buchwalter, Stephen L.; Bosso, Joseph F.; and Christenson, Roger M., to PPG Industries, Inc. Process for electrodeposition of Michael adducts of polymeric materials. 4,316,784, Cl. 204-181.00C.
Buckley, Jim, to McHenry Systems, Inc. Sealed prism assembly. 4,316,650, Cl. 350-67.000.
Bundschuh, John J.; and Kosarko, Gerald J., to Eastman Kodak Company. Camera for close-up and normal range photography. 4,316,658, Cl. 354-27.000.
Bunes, Leonard A., to Dynapol. Products including edibles colored with polymeric red colors. 4,316,918, Cl. 426-540.000.
Burgess, David E. Means and method for controlling lumen output and power consumption of phosphor excitable lamps. 4,317,069, Cl. 315-227.00R.
Burk, Michael D.; Hipsher, Gary L.; and Nicoles, Gregory M., to General Tire & Rubber Co., The. Vehicle suspension bushing. 4,316,643, Cl. 308-26.000.
Burnham, John W., to Halliburton Company. Gelled oil base compositions and methods of preparation and use of same. 4,316,810, Cl. 252-8.55R.
Burnham, Robert D.; Scifres, Donald R.; and Streifer, William, to Xerox Corporation. Channeled mesa laser. 4,317,085, Cl. 372-50.000.
Burns, Edward J.; and Hatfield, James R., to InterNorth, Inc. Dust suppressant. 4,316,811, Cl. 252-88.000.
Burnworth, Donald O., to Miller, Martin P., a part interest. Power priority control system for aircraft and test apparatus therefor. 4,317,177, Cl. 364-483.000.
Burroughs Corporation: *See*—
Tranberg, Stephanie K., 4,316,322, Cl. 29-852.000.
Zachry, Clyde L.; and McCutchen, William C., 4,316,605, Cl. 269-43.000.
Buttner, Horace J.; and Nordstrom, Arnold B., to Buttner, Horace J. Multi-circuit switch assembly. 4,317,015, Cl. 200-153.00J.
Buys, Henri; and Carisey, Camille, to Societe Anonyme dite: Transaccompagnie pour le Developpement des Transactions Automatiques. Apparatus for separating and extracting stacked sheets one by one. 4,316,606, Cl. 271-10.000.
C. van der Lely, N.V.: *See*—
van der Lely, Cornelis; and van der Lely, Ary, 4,316,581, Cl. 239-682.000.
Cacciapuoti, Beniamino: *See*—
Manini, Benito; Furia, Edoardo; Stefani, Eugenio; Baldi, Giuliano; Barracchia, Pasquale; Cacciapuoti, Beniamino; and Mattei, Bruno, 4,316,488, Cl. 139-13.00R.
Caesar, Michael B., to Occidental Research Corporation. Entrainment separator. 4,316,728, Cl. 55-226.000.
Calgon Corporation: *See*—
Sinkovitz, Gloria D.; and Dixon, Kenneth W., 4,316,943, Cl. 428-475.800.
Canadian General Electric Company Limited: *See*—
Lee, Harvey R., 4,316,771, Cl. 376-415.000.
Canadian Patents & Development Limited: *See*—
Zwarts, Cornelis M. G., 4,317,077, Cl. 324-179.000.
Canevari, Gerard P., to Exxon Research & Engineering Co. Method and demulsifier composition. 4,316,806, Cl. 210-708.000.
Cannalonga, Marco A.: *See*—
Antoshkiw, Thomas; Cannalonga, Marco A.; and Guerin, Frank, 4,316,917, Cl. 426-540.000.
Canning, Everett J., Jr., to Western Electric Co., Incorporated. Copper refining. 4,316,742, Cl. 75-76.000.
Canon Kabushiki Kaisha: *See*—
Mochizuki, Noritaka; Minami, Setsuo; Matsui, Yoshiya; Midorikawa, Koyo; Tsunoda, Atsuo; Murase, Hidetoshi; Suzuta, Mikio; and Moriwaki, Masazumi, 4,316,665, Cl. 355-1.000.
Nishigaki, Yuji; Kasai, Masanao; and Okano, Kazumi, 4,316,948, Cl. 430-94.000.
Saito, Syuichiro, 4,316,661, Cl. 354-234.000.
Shirato, Yoshiaki; Takatori, Yasushi; Hara, Toshitami; Nishimura, Yukuo; and Takahashi, Michiko, 4,317,124, Cl. 346-140.00R.
Suzuki, Kiyoshi; and Kawashima, Hirokuni, 4,316,947, Cl. 430-94.000.
Tokuda, Ryuji; Mashimo, Yukio; and Uchidoi, Masanori, 4,317,070, Cl. 315-241.00P.
Tosaka, Yoichi; Hashimoto, Teiji; and Tezuka, Nobuo, 4,316,662, Cl. 354-241.000.

Cantwell, J. Edward: *See—*
Mac Lean, John P.; Cantwell, J. Edward; Brown, John D.; and Hoy, Harold D., 4,316,729, Cl. 55-459.00R.

Carisey, Camille: *See—*
Buys, Henri; and Carisey, Camille, 4,316,606, Cl. 271-10.000.

Carl Freudenberg, Firma: *See—*
Tischer, Kurt; Tecl, Bohuslav; and Fottinger, Walter, 4,316,931, Cl. 428-267.000.

Carlsen, Carl E. Roach trap. 4,316,344, Cl. 43-114.000.

Carney, Richard W. J.; and deStevens, George, to Ciba-Geigy Corporation. Tertiary aminoacids. 4,316,850, Cl. 260-326.100.

Carrier Corporation: *See—*
Bolton, Theodore S.; and Lang, Richard D., 4,316,408, Cl. 98-41.00R.
Manning, John D., 4,316,366, Cl. 62-200.000.

Carstab Corporation: *See—*
Molt, Kenneth R.; and Zestermann, Mary J., 4,316,837, Cl. 260-45.80N.

Carter, Richard T. Paint can dispensing ring attachment. 4,316,560, Cl. 222-567.000.

Caruolo, Antonio B.: *See—*
Walch, Allan P.; and Caruolo, Antonio B., 4,317,021, Cl. 219-121.0LG.

Caruso, Michael J.; Hildebrand, David B.; and Ohri, Kul B., to Mostek Corporation. Bandgap voltage reference employing sub-surface current using a standard CMOS process. 4,317,054, Cl. 307-297.000.

Casio Computer Co., Ltd.: *See—*
Shimizu, Tomohiro; and Muranaga, Yoshinobu, 4,317,183, Cl. 364-900.000.

Castle, Richard M., to RCA Corporation. Head suspension velocity control apparatus for electromechanical recorder. 4,317,192, Cl. 369-244.000.

Castner, Kenneth F.: *See—*
Kennedy, Joseph P.; and Castner, Kenneth F., 4,316,978, Cl. 526-348.700.

Ceelen, Theodorus M., to Xerox Corporation. Apparatus for transferring a toner image. 4,316,666, Cl. 355-3.0TR.

Celotex Corporation, The: *See—*
Moss, Ernest K., 4,316,935, Cl. 428-304.400.

Ceprini, Mario Q.; and Warren, Marvin, to TennecoChemicals, Inc. Partial (2,2,4-trimethylpentane-1,3-diol monoisobutyrate) esters of polycarboxylic acids and water-soluble salts of said partial esters. 4,316,987, Cl. 560-199.000.

Cesas, Romas: *See—*
Gavlin, Gilbert; and Cesas, Romas, 4,316,846, Cl. 260-326.450.

Chambers, Ramon P.: *See—*
Gordy, Robert S.; Sanders, David E.; and Chambers, Ramon P., 4,317,204, Cl. 375-1.000.

Champion International Corporation: *See—*
Lepisto, J. George, 4,316,574, Cl. 229-62.500.

Chang, Augustine W.: *See—*
Anantha, Narasipur G.; and Chang, Augustine W., 4,316,319, Cl. 29-577.00C

Chaparral Marine Products, Inc.: *See—*
Walthall, Bobby K.; and Harris, Sammy E., 4,316,588, Cl. 242-129.620.

Charles Stark Draper Laboratory, The: *See—*
Watson, Paul C., 4,316,329, Cl. 33-169.00C.

Charpak, Georges, to Agence Nationale de Valorisation de la Recherche. Device for determining the spatial distribution of radiation. 4,317,038, Cl. 250-385.000.

Chasek, Norman E. Cross correlated doppler radar/infra red velocity and presence sensor. 4,317,117, Cl. 343-6.0ND.

Chatelain, Michel, to Brave Trading Limited. Retaining and stretching element for a film supporting framework. 4,316,308, Cl. 24-335.000.

Chauvette, Robert R., to Eli Lilly and Company. Penicillin intermediates. 4,316,842, Cl. 260-245.20R.

Chauvin, Yves: *See—*
Le Pennec, Dominique; Commereuc, Dominique; and Chauvin, Yves, 4,316,851, Cl. 260-408.000.

Chelminski, Stephen V., to Bolt Associates, Inc. Pivoted elevator mounting for mobile land seismic energy source. 4,316,521, Cl. 181-114.000.

Chemische Werke Huls Aktiengesellschaft: *See—*
Gude, Fritz; Haferkorn, Herbert; and Schulde, Felix, 4,316,977, Cl. 526-272.000.

Cheng, Dah Y.; and Wiersma, Steve J. Composite membrane for a membrane distillation system. 4,316,772, Cl. 202-163.000.

Cherukuri, Subraman R.: *See—*
Friello, Dominick R.; Parker, Ellery; Mackay, Donald A. M.; and Cherukuri, Subraman R., 4,316,915, Cl. 426-5.000.

Chevron Research: *See—*
Feffer, Philip C., 4,316,311, Cl. 28-248.000.

Chi, Chao S., to Sperry Corporation. Transducer for perpendicular magnetic recording. 4,317,148, Cl. 360-119.000.

Chicago Decal Company: *See—*
Mazurk, Louis R., 4,317,011, Cl. 200-5.00A.

Childress, David L.: *See—*
Skach, Allen G.; Childress, David L.; and Hayes, William V., 4,316,708, Cl. 425-73.000.

Christen, Werner; and Muller, Helmut, to Draiswerke GmbH. Apparatus for continuous mixing of solids and liquids. 4,316,671, Cl. 366-192.000.

Christenson, Roger M.: *See—*
Buchwalter, Stephen L.; Bosso, Joseph F.; and Christenson, Roger M., 4,316,784, Cl. 204-181.00C.

Christians, Scott T.: *See—*
Bell, Robert R.; and Christians, Scott T., 4,317,222, Cl. 455-77.000.

Christiansen, Gerald E.; and Politz, William E., to Stephen A. Young Corporation. Single handle mixing valve with improved seat. 4,316,485, Cl. 137-625.400.

Ciavatta, Armand. Tubular shank device. 4,316,677, Cl. 405-259.000.

Ciba-Geigy Corporation: *See—*
Carney, Richard W. J.; and deStevens, George, 4,316,850, Cl. 260-326.100.
Kamber, Bruno; Rink, Hans; and Sieber, Peter, 4,316,890, Cl. 424-177.000.
Kristiansen, Odd; and Drabek, Jozef, 4,316,908, Cl. 424-277.000.
Kunz, Walter; Eckhardt, Wolfgang; and Hubele, Adolf, 4,316,909, Cl. 424-279.000.
Ledouble, Jean-Pierre; and Muller, Klaus, 4,316,854, Cl. 260-453.100.
Marky, Michael, 4,316,860, Cl. 260-513.700.
Petitpierre, Jean C., 4,316,621, Cl. 282-27.500.
Wasley, Jan W. F., 4,316,900, Cl. 424-250.000.

Cibulka, Josef: *See—*
Winkler, Jiri; Cibulka, Josef; Bryksi, Jan; Jelinek, Richard; Krtek, Jan; Mickal, Vladimir; Hlousek, Jaroslav; and Kondr, Milan, 4,317,166, Cl. 363-138.000.

Cincotta, Louis; and Foley, James W., to Polaroid Corporation. Novel xanthene compounds and photographic products and processes employing the same. 4,316,950, Cl. 430-221.000.

CKD Praha, oborovy podnik: *See—*
Winkler, Jiri; Cibulka, Josef; Bryksi, Jan; Jelinek, Richard; Krtek, Jan; Mickal, Vladimir; Hlousek, Jaroslav; and Kondr, Milan, 4,317,166, Cl. 363-138.000.

Clark, Ronald M. Trowel. 4,316,302, Cl. 15-235.400.

Clinton, Albert J., deceased (by Plimpton, Thomas L., administrator); and O'Doherty, George O. P., to Eli Lilly and Company. N-Alkyldiphenylamines. 4,316,988, Cl. 564-433.000.

Clopton, Robert T., to Eaton Corporation. Holding chuck. 4,316,614, Cl. 279-1.00G.

Coates, Ian H.: *See—*
Oxford, Alexander W.; Bradshaw, John; and Coates, Ian H., 4,316,907, Cl. 424-275.000.

Coca-Cola Company, The: *See—*
Hughes, Robert D.; and Brazell, James, 4,316,533, Cl. 194-4.00C.

Cochran, Rex H. Auxiliary slitting blade for a cutting instrument. 4,316,324, Cl. 30-162.000.

Cocking, Glyn: *See—*
Pearce, Michael I.; and Cocking, Glyn, 4,316,482, Cl. 137-315.000.

Coe, Charles D.; Bell, Donald; and Bray, Michael R., to Land Combustion Limited. Flame monitoring apparatus and method. 4,317,045, Cl. 250-554.000.

Coffee, Ronald A.; Young, Brian W.; and Middleton, Michael R., to Imperial Chemical Industries Limited. Electrostatically sprayable insecticidal formulations. 4,316,914, Cl. 424-305.000.

Cohen, Abraham B.; and Fan, Roxy N., to Du Pont de Nemours, E. I., and Company. Multilayer photosensitive element with solvent-soluble layer. 4,316,951, Cl. 430-253.000.

Cohen, Richard L.; and Meek, Ronald L., to Western Electric; and Bell Telephone Laboratories, Incorporated. Gold monitoring procedure. 4,317,035, Cl. 250-272.000.

Cohn, Jona: *See—*
Davidson, Allen L.; and Cohn, Jona, 4,317,217, Cl. 455-24.000.

Colavecchio, Robert, to Elmwood Sensors, Inc. Grounded thermostat switch. 4,317,098, Cl. 337-113.000.

Coleman, Paul E.: *See—*
Pommer, Dennis L.; and Coleman, Paul E., 4,316,384, Cl. 73-76.000.

Collonge, Jacques H.; and Widmer, Hans, to Goodyear Tire & Rubber Company, The. Discoloration prevention of phenolic antioxidants. 4,316,996, Cl. 568-784.000.

Columbia Machine, Inc.: *See—*
Baxter, Donald J.; and Kolin, George J., 4,316,693, Cl. 414-59.000.

Combustion Electromagnetics, Inc.: *See—*
Ward, Michael A. V.; and Wu, Tai T., 4,317,068, Cl. 315-209.0CD.

Combustion Engineering, Inc.: *See—*
Kochey, Edward L., 4,316,420, Cl. 110-347.000.

Comfort Products, Inc.: *See—*
Giese, Erik O.; and Gross, Alexander L., 4,316,332, Cl. 36-28.000.
Giese, Erik O.; and Gross, Alexander L., 4,316,335, Cl. 36-129.000.

Commereuc, Dominique: *See—*
Le Pennec, Dominique; Commereuc, Dominique; and Chauvin, Yves, 4,316,851, Cl. 260-408.000.

Compagnie Francaise de Raffinage: *See—*
Atlani, Martial; Loutaty, Roben; Wakselman, Claude; and Yacono, Charles, 4,316,796, Cl. 208-313.000.

Compagnie Neerlandaise de l'Azote: *See—*
Van Hijfte, Willy H. P.; and Goethals, Rafael A. J., 4,316,736, Cl. 71-59.000.

Connell, Neville: *See—*
Scifres, Donald R.; Connell, Neville; and Streifer, William, 4,317,086, Cl. 372-49.000.

Conoco Inc.: *See—*
Wingrave, James A., 4,316,976, Cl. 526-200.000.

Container Corporation of America: *See—*
Turner, Gerald D.; and Wischoff, Donald F., 4,316,563, Cl. 225-41.000.

Cook, Troy L.: *See—*
Blalock, Sherman S., 4,317,058, Cl. 310-24.000.

Cooper, Roydon B., to Pall Corporation. Filter assembly with jacked filter cannister. 4,316,801, Cl. 210-90.000.

Copolymer Rubber & Chemical Corp.: *See—*
Wirth, Kenneth H., 4,316,825, Cl. 260-5.000.

Coratomic, Inc.: *See—*
Shipko, Frederick J.; and Norman, Robert D., 4,316,471, Cl. 128-419.00P.

Coren, Gerald. Clip-on protector. 4,317,153, Cl. 361-119.000.

Corna, John F.; and Blais, Marcel H. Wall construction method for swimming pools. 4,316,571, Cl. 228-173.00C.

Corwin, Richard R.; and Moorman, Stephen L., to Beta Industries, Inc. Apparatus and method for determining the configuration of a reflective surface. 4,316,670, Cl. 356-349.000.

Corzine, Robert G.; and Winkler, Guenter H., to United States of America, Navy. Symmetrical beam-forming network. 4,317,118, Cl. 343-100.00R.

Cottrell, Don J.; and Cottrell, Don M. Automobile tie down assembly for vehicle carriers. 4,316,686, Cl. 410-12.000.

Cottrell, Don M.: *See—*
Cottrell, Don J.; and Cottrell, Don M., 4,316,686, Cl. 410-12.000.

Craig, Timothy P.; Stimple, James R.; and Erickson, Paul M., to Motorola, Inc. Sectored antenna receiving system. 4,317,229, Cl. 455-277.000.

Crane Co.: *See—*
Skarvada, Thomas, 4,317,173, Cl. 364-426.000.

Creme, Michael M. Prelooped fishing lure. 4,316,343, Cl. 43-42.240.

Cripe, Alan R.: *See—*
Hindin, Eugene; Cripe, Alan R.; and Cripe, Christopher A., 4,316,418, Cl. 105-215.00C.

Cripe, Christopher A., to Bi-Modal Corporation. Electro pneumatic brake system for railway car. 4,316,640, Cl. 303-20.000.

Cripe, Christopher A.: *See—*
Hindin, Eugene; Cripe, Alan R.; and Cripe, Christopher A., 4,316,418, Cl. 105-215.00C.

Cromemco Inc.: *See—*
Walker, James T., 4,317,114, Cl. 340-721.000.

Crooke, Michael D. Variable displacement vane pump with non-fluctuating flow. 4,316,706, Cl. 418-16.000.

Crouse, John C.: *See—*
Degeneff, Robert C.; and Crouse, John C., 4,317,096, Cl. 336-70.000.

Crown Metal Mfg. Co.: *See—*
Varon, David S.; and Silverman, Irving, 4,316,546, Cl. 211-105.100.
Varon, David S., 4,316,547, Cl. 211-105.100.

CSELT-Centro Studi e Laboratori Telecommunicazioni S.p.A.: *See—*
Barberis, Giulio; and Pazzaglia, Daniele, 4,317,195, Cl. 370-94.000.

CTS Corporation: *See—*
Kuo, Charles C. Y., 4,316,942, Cl. 428-432.000.

Cullis, Herbert M.; and Gutierrez, Luiz F., to Baxter Travenol Laboratories, Inc. Method and chamber for separating granulocytes from whole blood. 4,316,576, Cl. 233-26.000.

Cummins, Donald L., to AMF Incorporated. Pan indexing apparatus. 4,316,534, Cl. 198-345.000.

Cupido, Ernst P., to Wavin, B.V. Plastics pallet. 4,316,419, Cl. 108-56.100.

Cusano, Dominic A.; Swank, Robert K.; and White, Philip J., to General Electric Company. Index-matched phosphor scintillator structures. 4,316,817, Cl. 252-301.180.

Cuscurida, Michael: *See—*
Speranza, George P.; Cuscurida, Michael; and Zimmerman, Robert L., 4,316,991, Cl. 568-609.000.

Custom Organics, Inc.: *See—*
Gavlin, Gilbert; and Cesas, Romas, 4,316,846, Cl. 260-326.450.

Da Costa, Daniel D. Illuminated display assembly. 4,316,337, Cl. 40-564.000.

Dahl, Carl B., to Beloit Corporation. Centrifugally cast chilled iron roll. 4,316,769, Cl. 162-360.00R.

Dahlberg, Reinhard, to Licentia Patent-Verwaltungs-G.m.b.H. Negative semiconductor resistance. 4,317,091, Cl. 331-107.00R.

Dahlstrom, James A.: *See—*
Franz, Rudolph J.; DeVera, Dennis; and Dahlstrom, James A., 4,316,479, Cl. 137-85.000.

D'Alelio, Gaetano F.; and Waitkus, Phillip A., to Plastics Engineering Company. Polyimide derivatives having terminal acetylenic groups. 4,316,845, Cl. 260-326.00S.

D'Alelio, Gaetano F.: *See—*
Waitkus, Phillip A.; and D'Alelio, Gaetano F., 4,316,843, Cl. 260-326.00S.
Waitkus, Phillip A.; and D'Alelio, Gaetano F., 4,316,844, Cl. 260-326.00S.

Dalidovich, Alexandr S.: *See—*
Ragoza, Igor V.; Dalidovich, Alexandr S.; Begunov, Petr M.; Vasiljuk, Petr J.; Tonikian, Robert T.; Tonikian, Dina N.; and Makarenko, Alexandr V., 4,316,369, Cl. 66-81.000.

Danfoss A/S: *See—*
Hansen, Gunnar L.; and Hansen, Christian B., 4,316,707, Cl. 418-60.000.
Tandrup, Niels; and Petersen, Alex, 4,316,486, Cl. 137-625.640.

Daniels, Steven D., to Eastman Kodak Company. Infrared filter exposure compensation apparatus. 4,316,659, Cl. 354-42.000.

Daughenbaugh, Gerald A.; Koob, Philip W.; Moxley, Arthur E.; and Wallace, Joseph E., to International Business Machines Corporation. Sandwich type magnetoresistive read head. 4,317,147, Cl. 360-113.000.

Davidson, Allen L.; and Cohn, Jona, to Motorola, Inc. Tag generator for a same-frequency repeater. 4,317,217, Cl. 455-24.000.

Davidson, Donald R.; and Peterson, Wesley R., to Singer Company, The. Button attaching tool. 4,316,562, Cl. 223-102.000.

Davis, Charles M., Jr. Compact can crusher. 4,316,410, Cl. 100-48.000.

Davison, John A.: *See—*
Rim, Yong S.; Davison, John A.; and Nudenberg, Walter, 4,316,971, Cl. 525-310.000.

Davlin, Irwin H. Access union. 4,316,624, Cl. 285-158.000.

Davydov, Jury V.: *See—*
Zelenov, Petr I.; Usachev, Petr A.; Davydov, Jury V.; Lyakhov, Vyacheslav P.; Zelenova, Irina M.; Aleinikov, Nikolai A.; Sladkovich, Vladlen F.; and Titov, Viktor I., 4,316,542, Cl. 209-39.000.

Dayron Corporation: *See—*
Hermanson, Gerald P., 4,316,414, Cl. 102-247.000.

de Almada, Fernando F. Energy harnessing apparatus. 4,317,047, Cl. 290-53.000.

Dean, Q. Wayne, to Offshore Company, The. Riser angle positioning system and process. 4,317,174, Cl. 364-432.000.

de Bruyne, Pieter. Position-determining system. 4,317,005, Cl. 178-19.000.

Dechantsreiter, Max J., to Harnischfeger Corporation. Mechanism for latchingly connecting telescoping members. 4,316,528, Cl. 187-9.00E.

Decker, Werner, to Windmoller & Holscher. Method and apparatus for severing tube sections from tubular webs and transporting same. 4,316,723, Cl. 493-419.000.

DeCristofaro, Nicholas J.; and Henschel, Claude, to Allied Corporation. Homogeneous brazing foils of copper based metallic glasses. 4,316,573, Cl. 228-263.00R.

DeCristofaro, Nicholas J.: *See—*
Sexton, Peter; and DeCristofaro, Nicholas J., 4,316,572, Cl. 228-263.00R.

Deere & Company: *See—*
Pickett, Terence D.; and Formwalt, Charles W., Jr., 4,317,232, Cl. 455-606.000.

De Fraites, Emanuel G. Refuse disinfection device. 4,316,871, Cl. 422-26.000.

De Frees, Joseph H. Liquid level valve. 4,316,484, Cl. 137-389.000.

DeGeeter, Melvin J.; and McCall, John M., to Upjohn Company, The. Animal feed and process. 4,316,901, Cl. 424-251.000.

Degeneff, Robert C.; and Crouse, John C., to General Electric Company. Electrostatic shielding of nonsequential disc windings in transformers. 4,317,096, Cl. 336-70.000.

Degussa Aktiengesellschaft: *See—*
Bozon, Alfred; Koberstein, Edgar; Pletka, Hans-Dieter; and Voelker, Herbert, 4,316,823, Cl. 252-465.000.

Dekker, Cornelis B.; and Boschma, Klaas M., to U.S. Philips Corporation. Coherent receiver for angle-modulated data signals. 4,317,210, Cl. 375-76.000.

Delacour, Jacques: *See—*
Bocard, Christian; Delacour, Jacques; and Renault, Philippe, 4,316,804, Cl. 210-671.000.

Delmonte, John. Fiber reinforced cementitious castings. 4,316,925, Cl. 428-105.000.

Del Nero, Claude, to Fichet-Bauche. High safety bolt control devices. 4,316,371, Cl. 70-417.000.

DeMaria, Francesco: *See—*
Pfeiffer, Ronald E.; and DeMaria, Francesco, 4,316,714, Cl. 425-382.200.

de Mesmaeker, Ivan; and Muller, Peter, to BBC Brown, Boveri & Company Limited. Apparatus for fault direction-comparison protection. 4,317,151, Cl. 361-69.000.

Denham, Daniel S.: *See—*
Griffith, Thomas D.; and Denham, Daniel S., 4,316,809, Cl. 252-8.55D.

De Niet, Edmond; and Rijckaert, Albert M. A., to U.S. Philips Corporation. Azimuth correction of head gaps. 4,317,144, Cl. 360-76.000.

Denny, Richard W.; and Diddens, Paul A., to Honeywell, Inc. Fail safe control circuit. 4,317,018, Cl. 219-216.000.

Denoor, Gaston; and Thillet, Georges, to Neyrpic. Tubular obturator for use with a hollow body. 4,316,487, Cl. 138-89.000.

Densmore, Richard M.: *See—*
Klieman, Charles H.; and Densmore, Richard M., 4,316,468, Cl. 128-325.000.

Dequasie, Andrew, to Sprague Electric Company. AC Capacitor. 4,317,158, Cl. 361-272.000.

Dequasie, Andrew, to Sprague Electric Company. AC Capacitor and impregnant therefor. 4,317,159, Cl. 361-318.000.

des Etablissement Public de Diffusion Dit "Telediffusion de France": *See—*
Guinet, Yves M., 4,317,132, Cl. 358-142.000.

de Schrijver, Marc, to Solco Basel AG. Radioactive composition. 4,316,883, Cl. 424-1.000.

Desplats, Andre, to Tractel S.A. Device for pressing a cable against the bottom of a pulley groove. 4,316,602, Cl. 254-270.000.

deStevens, George: *See—*
Carney, Richard W. J.; and deStevens, George, 4,316,850, Cl. 260-326.100.

DeVera, Dennis: *See—*
Franz, Rudolph J.; DeVera, Dennis; and Dahlstrom, James A., 4,316,479, Cl. 137-85.000.

DeVries, Robert C.; and Tuft, Roy E., to General Electric Company. Fingerprinting crystals. 4,316,385, Cl. 73-104.000.

de Winter, Koen M. M., to Mepalservice B.V. Canister closure. 4,316,550, Cl. 215-360.000.

Dey, Arabinda N., to Duracell International Inc. Rechargeable nonaqueous silver alloy anode cell. 4,316,777, Cl. 204-2.100.

Diamond Shamrock Industrial Chemicals Limited: *See*—
Walkden, David J., 4,316,832, Cl. 260-31.80N.
Diddens, Paul A.: *See*—
Denny, Richard W.; and Diddens, Paul A., 4,317,018, Cl. 219-216.000.
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Dijkmans, Eise C.; and van de Plassche, Rudy J., to U.S. Philips Corporation. Two transistor switch. 4,317,128, Cl. 357-46.000.
DiLorenzo, Mark. Television reception interfering apparatus. 4,317,213, Cl. 455-1.000.
Dinegar, Robert H.; and Kirkham, John, to United States of America, Energy. Low voltage nonprimary explosive detonator. 4,316,412, Cl. 102-202.500.
Diversified Products Corporation: *See*—
Silberman, Ira J., 4,316,609, Cl. 272-118.000.
Dixon, Kenneth W.: *See*—
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Dodge, Robert J., to Pennwalt Corporation. Solar energy concentrator system. 4,316,448, Cl. 126-424.000.
Dohogne, James R., to Sperry Corporation. Magnetically suspended free rotor gyroscope. 4,316,394, Cl. 74-5.460.
Dolan, Daniel F.: *See*—
Liu, Benjamin Y. H.; Kittelson, David B.; Dolan, Daniel F.; and Pui, David Y. H., 4,316,360, Cl. 60-275.000.
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Dow Chemical Company, The: *See*—
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Martin, Albert E., 4,316,417, Cl. 105-197.0DB.
Randall, Russel R., 4,317,034, Cl. 250-262.000.
Drugge, Roland, to Luossavaara - Kiirunavaara Aktiebolag. Heating or heat-treatment plant. 4,316,718, Cl. 432-58.000.
Duggan, William R.; and Heath, John M., to Micro-Precision, Inc. Annular power tool. 4,316,328, Cl. 30-389.000.
Dunn, Michael A.: *See*—
Mason, Neil E.; Dunn, Michael A.; and Mannor, James E., 4,316,338, Cl. 42-1.00G.
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Bergna, Horacio E., 4,316,744, Cl. 106-38.350.
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England, David C.; Kraft, Robert L.; and Krespan, Carl G., 4,316,986, Cl. 560-184.000.
Holyoke, Caleb W., Jr., 4,316,911, Cl. 424-298.000.
Thornley, Glenn D., 4,316,940, Cl. 428-413.000.
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Bunes, Leonard A., 4,316,918, Cl. 426-540.000.
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Krapcho, John, 4,316,905, Cl. 424-274.000.
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Henry, James W., 4,316,867, Cl. 264-169.000.
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Edwards, Earl G.; Robinson, Jerry T.; and Wilzbach, Bernard L., to International Business Machines Corporation. Copier and recirculating document feeder. 4,316,667, Cl. 355-3.0SH.
Eguchi, Tsukasa; and Morozumi, Mituharu, to Asahi Glass Company Ltd.; and Kashima Kagaku, Co. Rubber stopper for sealing. 4,316,941, Cl. 428-421.000.
Eibl, Hansjorg, to Max Planck-Gesellschaft. Filter for the removal of apolar organic substances from gases. 4,316,730, Cl. 55-524.000.
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Eli Lilly and Company: *See*—
Abbott, Bernard J.; and Berry, Dennis R., 4,316,955, Cl. 435-47.000.
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Michel, Karl H.; and Hoehn, Marvin M., 4,316,959, Cl. 435-122.000.
Ellis, Howard F.; and Kresge, James S., to General Electric Company. Stable high voltage DC varistor. 4,317,101, Cl. 338-21.000.
Elmwood Sensors, Inc.: *See*—
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England, David C.; Kraft, Robert L.; and Krespan, Carl G., to Du Pont de Nemours, E. I., and Company. Preparation of difluoromalonyl fluoride. 4,316,986, Cl. 560-184.000.
English Clays Lovering Pochin & Company Ltd.: *See*—
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Erickson, Paul M.: *See*—
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Erth, Richard A., to Borg-Warner Corporation. Inverter-motor system with different control characteristics for inverter voltage and frequency. 4,317,074, Cl. 318-808.000.
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Esders, Theodore W.: *See*—
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Esposito, Christopher, to Four Seasons Solar Products Corporation. Greenhouse and solarium structurers and related method. 4,316,405, Cl. 98-33.00R.
Esposito, Robert A.; Valego, Frederick F., Jr.; and Hoagland, John C., to Monsanto Company. Extruding colored thermoplastic resin sheets. 4,316,868, Cl. 264-171.000.

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Evans, Jack L. Vehicle wind deflectors. 4,316,630, Cl. 296-1.00S.
Evans, John W.; and Young, Gary C., to Stauffer Chemical Company. Production of USP quality lactose. 4,316,749, Cl. 127-55.000.
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Makowski, Henry S.; Lundberg, Robert D.; and Bock, Jan, 4,316,828, Cl. 260-23.50A.
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Faunce, Stuart F.: *See*—
Faust, Elbert R.; and Faunce, Stuart F., 4,316,805, Cl. 210-693.000.
Faust, Elbert R.; and Faunce, Stuart F., to Faunce and Associates, Inc. Oil separation and recovery process and apparatus. 4,316,805, Cl. 210-693.000.
Favreau, Michel, to Thomson CSF. Apparatus for the digitization of videofrequency television signals. 4,317,129, Cl. 358-13.000.
Featherspring International Corporation: *See*—
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Feffer, Philip C., to Chevron Research. Bounce crimping apparatus. 4,316,311, Cl. 28-248.000.
Felicetti, Luigi, to Euram Italia S.p.A. Dispenser for tinfoil and the like. 4,316,564, Cl. 225-77.000.
Fencl, Vernor R.; and Javorik, Laszlo, to Grotnes Metalforming Systems, Inc. Roll forging machine. 4,316,377, Cl. 72-189.000.
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Fernsler, Ronald E.; and Willis, Donald H., to RCA Corporation. Two-loop horizontal AFPC system. 4,317,133, Cl. 358-158.000.
Ferrari, Mario. Flexible container and expeller. 4,316,556, Cl. 222-95.000.
F'Geppert, Erwin, to United States of America, Army. Means for securing two elements against relative axial movement. 4,316,678, Cl. 403-259.000.
Fialkov, Jury A.; and Shelyazhenko, Svetlana V. Process for preparing difluoromethoxy derivatives of aromatic aldehydes. 4,316,989, Cl. 568-433.000.
Fichet-Bauche: *See*—
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Fillot, Jean-Jacques Y. Remote monitoring system for remote locating and gain regulating of amplification circuits in data transmission line. 4,317,010, Cl. 179-175.31R.
Findell, Max. Central focus solar energy system. 4,317,031, Cl. 250-203.00R.
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Fischer & Porter Company: *See*—
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Fitzgerald, John; and Kesseler, Jan A. H., to U.S. Philips Corporation. Bowl mirrored lamp. 4,317,060, Cl. 313-113.000.
Fitzsimmons, William A.; and Rosocha, Louis A. Dielectric surface electrical discharge device. 4,317,067, Cl. 315-150.000.
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Flaugh, Ronald C. Vehicle towing apparatus. 4,316,617, Cl. 280-402.000.
Flaum, Stephen S.; and Zielinski, Jozef Z., to S&S Corrugated Paper Machinery Co., Inc. Fluid metering device. 4,316,428, Cl. 118-203.000.
Flaum, Stephen S.; and Leff, Martin J., to S&S Corrugated Paper Machinery Co., Inc. Adhesive metering device for corrugating processes. 4,316,755, Cl. 156-205.000.
FMC Corporation: *See*—
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Fodor, Joseph E. Solar heater. 4,316,449, Cl. 126-429.000.
Foley, James W.: *See*—
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Foller, Peter C.; and Tobias, Charles W., to University of California, Regents of the. Electrolytic process for the production of ozone. 4,316,782, Cl. 204-129.000.
Ford, Michael E.; and Johnson, Thomas A., to Air Products and Chemicals, Inc. Reforming linear polyamines. 4,316,840, Cl. 260-239.0BC.
Ford, Michael E.; and Johnson, Thomas A., to Air Products and Chemicals, Inc. Reforming linear polyamines. 4,316,841, Cl. 260-239.0BC.
Ford Motor Company: *See*—
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Scarpati, Thomas S.; and Ford, Robert J., 4,316,701, Cl. 416-226.000.
Foreman, Dave O. Steam cooking apparatus. 4,316,447, Cl. 126-369.000.
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Four Seasons Solar Products Corporation: *See*—
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Franz, Rudolph J.; DeVera, Dennis; and Dahlstrom, James A., to Eaton Corporation. Vacuum modulator valve and subassembly therefor. 4,316,479, Cl. 137-85.000.
Fraser, Ian E. B. Tape for use as the warp and weft of woven fabrics particularly useful for packaging. 4,316,933, Cl. 428-294.000.
Frederick Electronics Corp.: *See*—
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Freitag, Dieter: *See*—
Idel, Karsten; Serini, Volker; Freitag, Dieter; and Fengler, Gerd, 4,316,980, Cl. 528-199.000.
Friedman, Naomi P. Fitted bed covering. 4,316,299, Cl. 5-485.000.
Friello, Dominick R.; Parker, Ellery; Mackay, Donald A. M.; and Cherukuri, Subraman R., to Life Savers, Inc. Center-filled chewing gums. 4,316,915, Cl. 426-5.000.
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Kranz, Eckart; Kramer, Wolfgang; Buchel, Karl H.; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,316,932, Cl. 424-269.000.
Fruman, Daniel; and Tulin, Marshall, to Agence Nationale de Valorisation de la Recherche (ANVAR). Apparatus for measuring the representative parameters of rheological properties of viscoelastic fluids. 4,316,383, Cl. 73-55.000.
Fuchs, Rainer; Hammann, Ingeborg; and Stendel, Wilhelm, to Bayer Aktiengeselischaft. Arthropodicidally active styrylcyclopropanecarboxylic acid esters. 4,316,913, Cl. 424-304.000.
Fuchs, Rainer; Maurer, Fritz; Priesnitz, Uwe; and Riebel, Hans-Jochem, to Bayer Aktiengesellschaft. Preparation of 4-fluoro-3-phenoxy-toluene. 4,316,994, Cl. 568-639.000.
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Corporation; and Fujitsu Limited, JPX. Data transmission system. 4,317,207, Cl. 375-19.000.
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Fukuoka, Norio, to Olympus Optical Company Limited. Voice frequency signal actuated tape recorder. 4,317,189, Cl. 369-7.000.
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G. D. Searle & Co.: *See*—
Jones, David A., 4,316,892, Cl. 424-177.000.
Gardner, Hugh C., to Union Carbide Corporation. Polyester resin compositions. 4,316,835, Cl. 260-40.00R.
Gauthier, Jean, to Astin-France Assistance Technique Industrille. Device for regulating the tension of a travelling web. 4,316,587, Cl. 242-75.530.
Gavlin, Gilbert; and Cesas, Romas, to Custom Organics, Inc. Recovery of aprotic amides. 4,316,846, Cl. 260-326.450.
Gehlbach Engineering Ltd.: *See*—
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Gehlbach, Roger D., to Gehlbach Engineering Ltd. Ladder for play structure. 4,316,525, Cl. 182-106.000.
Gehlen, Jakob; and Wortmann, Hans, to ITT Industries, Inc. Floating caliper disc brake. 4,316,530, Cl. 188-73.390.
Geist, John K., to Nissen Corporation. Tumbling floor. 4,316,297, Cl. 5-420.000.
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Speer, Spencer J., 4,316,673, Cl. 366-337.000.
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Brunelle, Daniel J., 4,316,981, Cl. 528-199.000.
Cusano, Dominic A.; Swank, Robert K.; and White, Philip J., 4,316,817, Cl. 252-301.180.
Degeneff, Robert C.; and Crouse, John C., 4,317,096, Cl. 336-70.000.
DeVries, Robert C.; and Tuft, Roy E., 4,316,385, Cl. 73-104.000.
Ellis, Howard F.; and Kresge, James S., 4,317,101, Cl. 338-21.000.
Kirkpatrick, Robert G.; Snyder, Ronald R.; and Sibley, Lincoln L., Jr., 4,316,403, Cl. 89-12.000.
Nagamatsu, Brian H.; and Rolsma, Barney, 4,316,435, Cl. 122-235.00F.
Perry, Fred G., 4,317,218, Cl. 455-54.000.
Slusarczuk, George M. J.; and Brooks, Ronald E., 4,316,938, Cl. 428-403.000.
Tillson, Robert S.; Olashaw, William F.; and Postlethwait, James H., 4,317,160, Cl. 361-339.000.
General Foods Corporation: *See*—
Adams, Joan M.; Shoaf, Myron B.; Bochmann, Carl E.; and Basile, Peter A., 4,316,409, Cl. 99-275.000.
General Mills, Inc.: *See*—
Pommer, Dennis L.; and Coleman, Paul E., 4,316,384, Cl. 73-76.000.
General Signal Corporation: *See*—
Auer, John H., Jr.; and Birnbaum, David, 4,316,652, Cl. 350-276.00R.
General Tire & Rubber Co., The: *See*—
Burk, Michael D.; Hipsher, Gary L.; and Nicoles, Gregory M., 4,316,643, Cl. 308-26.000.
Genese, Joseph N.; and Muetterties, Andrew J., to Abbott Laboratories. Gravitational flow system for the sequential administration of medical liquids. 4,316,460, Cl. 128-214.00R.
Gengler, Robert H., to Western Electric Company, Inc. Apparatus and method for cleaning a flux station of a soldering system. 4,316,750, Cl. 134-18.000.
Gentile, Joseph P., to Vamco Machine and Tool, Inc. Oscillating cam feed apparatus for a press. 4,316,569, Cl. 226-158.000.
Gentry, Charles B.; and Scanlon, Robert M., to Granco Equipment, Inc. Ceramic heat exchanger with hot adjustment face seals. 4,316,500, Cl. 165-9.000.
George, William A., to Black & Decker Inc. Plunge type router. 4,316,685, Cl. 409-182.000.
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, to Hoffman-La Roche Inc. Imidazodiazepine derivatives. 4,316,839, Cl. 260-239.30T.
Gerlock, John L.; Braslaw, Jacob; and Albright, Jane, to Ford Motor Company. Process for polyol recovery from polyurethane foam comprising alcohol and steam hydrolysis. 4,316,992, Cl. 568-621.000.
Gernert, Herbert, to AGFA-Gevaert Aktiengesellschaft. Photographic emulsion containing a stabilizer, a process for its production and photographic materials. 4,316,953, Cl. 430-569.000.
Gervais, William J., to Micropolis Corporation. Compact magnetic disk storage system. 4,317,146, Cl. 360-98.000.
Gesellschaft fur Strahlen-und Umweltforschung mbH: *See*—
Uerpmann, Ernst-Peter, 4,316,814, Cl. 252-633.000.
Getgen, Lawrence E., to GTE Automatic Electric Laboratories, Inc. Carrier frequency spectrum generator using logic level input pulses. 4,317,194, Cl. 370-121.000.
GFF, Inc.: *See*—
Wilson, Robert J., 4,316,756, Cl. 156-227.000.
Ghosh, Sambhunath: *See*—
Klass, Donald L.; and Ghosh, Sambhunath, 4,316,961, Cl. 435-167.000.
Giacomo, Pack. Bow string release aid. 4,316,443, Cl. 124-35.00A.
Gibson, Duane M.: *See*—
Scott, Lewis A.; and Gibson, Duane M., 4,316,327, Cl. 30-386.000.
Giese, Erik O.; and Gross, Alexander L., to Comfort Products, Inc. Athletic shoe construction having shock absorbing elements. 4,316,332, Cl. 36-28.000.
Giese, Erik O.; and Gross, Alexander L., to Comfort Products, Inc. Athletic shoe construction. 4,316,335, Cl. 36-129.000.
Gilbert, Arthur H., to Imperial Chemical Industries Limited. Dimerization process. 4,316,857, Cl. 260-465.80D.
Girgis, Mikhail M., to PPG Industries, Inc. Modified phenolic aldehyde resin to produce an improved adhesive coating and method of making same. 4,316,968, Cl. 525-135.000.
Gitlitz, Melvin H.; Engelhart, John E.; and Russo, David A., to M&T Chemicals Inc. Insecticidal tetraorganotin compounds. 4,316,853, Cl. 260-429.700.
Glaxo Group Limited: *See*—
Oxford, Alexander W.; Bradshaw, John; and Coates, Ian H., 4,316,907, Cl. 424-275.000.
Gmeinder, Hermann: *See*—
Beier, Stefan; and Gmeinder, Hermann, 4,317,112, Cl. 340-568.000.
Goddard, Denis A., to Beloit Corporation. Pulse free stock screen and combination pump. 4,316,768, Cl. 162-336.000.
Goeth, Hans: *See*—
Wetzel, Bernd; Waitun, Eberhard; Maier, Roland; Rueter, Wolfgang; Lechner, Uwe; and Goeth, Hans, 4,316,898, Cl. 424-246.000.
Goethals, Rafael A. J.: *See*—
Van Hijfte, Willy H. P.; and Goethals, Rafael A. J., 4,316,736, Cl. 71-59.000.
Gold, Louis. Coal reactor conservation of blast furnace coke. 4,316,740, Cl. 75-42.000.
Goldberg, Gershon M.: *See*—
Masters, Joseph I.; Goldberg, Gershon M.; and Lavine, Jerome M., 4,316,946, Cl. 430-9.000.
Goldner, Richard. Adjustable end pin for the violoncello and the string bass. 4,316,402, Cl. 84-280.000.
Goldsmith, Hugh A.: *See*—
Farmer, Rodney C.; Goldsmith, Hugh A.; and Proudlove, Michael J., 4,316,628, Cl. 294-64.00R.
Goldstein, Irv. Inclined bicycle storage rack employing channel with midpoint frame shackle. 4,316,544, Cl. 211-5.000.
Gongwer, Calvin A., to Innerspace Corporation. Fluid control valve. 4,316,478, Cl. 137-14.000.
Goodman, Robert B.; and Seger, Charles C., to United Technologies Corporation. Compact valve actuator. 4,316,597, Cl. 251-58.000.
Goodyear Tire & Rubber Company, The: *See*—
Collonge, Jacques H.; and Widmer, Hans, 4,316,996, Cl. 568-784.000.
Greenwood, Alan, 4,316,710, Cl. 425-186.000.
Lin, Leroy C., 4,316,716, Cl. 425-72.00S.
Goof, Sven K. L.; and Hansen, Jens S. Electric motor with rotational speed regulation. 4,317,072, Cl. 318-138.000.
Goon, Harry; and Spector, George. Vehicular salt dispenser. 4,316,625, Cl. 291-1.000.
Gordy, Robert S.; Sanders, David E.; and Chambers, Ramon P., to NCR Corporation. Spread spectrum conferencing communication system. 4,317,204, Cl. 375-1.000.
Gottfried Bischoff Bau Kompl. Gasreinigungs- und Wasserruckkuhlanlagen GmbH & Co. KG: *See*—
Hegemann, Karl-Rudolf; Kautz, Johannes W.; and Weissert, Helmut, 4,316,727, Cl. 55-107.000.
Gouin, Philip R.: *See*—
Boulanger, Henry J.; and Gouin, Philip R., 4,317,100, Cl. 337-347.000.
Gower, Gerald: *See*—
Whitney, Thomas M.; and Gower, Gerald, 4,316,295, Cl. 4-612.000.
Gragg, John E., Jr., to Motorola, Inc. Silicon pressure sensor. 4,317,126, Cl. 357-26.000.
Graham, James T.: *See*—
Brems, John H.; and Graham, James T., 4,316,535, Cl. 198-473.000.
Granco Equipment, Inc.: *See*—
Gentry, Charles B.; and Scanion, Robert M., 4,316,500, Cl. 165-9.000.

Grant, David C., Jr.; and Hutchings, Thomas J., to Litton Systems, Inc. Ring laser. 4,317,089, Cl. 372-94.000.

Grant, Frederic F.; and Sarkisian, Nancy L., to Bell & Howell Company. Methods and apparatus for guiding tape. 4,316,568, Cl. 226-118.000.

Grasselli, Robert K.; Suresh, Dev D.; Brazdil, James F.; and Ratka, Frances L., to Standard Oil Co., The. Multiply promoted Sn-Sb oxide catalysts. 4,316,855, Cl. 260-465.300.

Grasselli, Robert K.: *See*—
Guttmann, Andrew T.; and Grasselli, Robert K., 4,316,856, Cl. 260-465.300.

Grasso's Koniklijke Machinefabrieken, N.V.: *See*—
Van Pelt, Willem; and Roodenrijs, Jacques P., 4,316,368, Cl. 62-542.000.

Gray, Stanley J. High tensile multiple sheath cable. 4,317,003, Cl. 174-106.00R.

Grear, Horace S.; and Leno, Theodore M., to Teletype Corporation. Tractor for engaging and advancing a web of paper. 4,316,567, Cl. 226-74.000.

Greenwood, Alan, to Goodyear Tire & Rubber Company, The. Duplex extruder head. 4,316,710, Cl. 425-186.000.

Grier, Nathaniel; Dybas, Richard A.; and Witzel, Bruce E., to Merck & Co., Inc. Anti-microbial piperidino buten-2-ones. 4,316,903, Cl. 424-267.000.

Griffith, Thomas D.; and Denham, Daniel S., to Standard Oil Company (Indiana). Micellar fluid for low and high hardness crude oil displacement. 4,316,809, Cl. 252-8.55D.

Griggs, Jay P. Recoil absorber and redirector mechanism for gun stock. 4,316,342, Cl. 42-74.000.

Grosko, John A., to United States Steel Corporation. Pour tube latching apparatus. 4,316,561, Cl. 222-606.000.

Gross, Alexander L.: *See*—
Giese, Erik O.; and Gross, Alexander L., 4,316,332, Cl. 36-28.000.
Giese, Erik O.; and Gross, Alexander L., 4,316,335, Cl. 36-129.000.

Gross, William H., to National Semiconductor Corporation. Current mirror circuit. 4,317,082, Cl. 330-288.000.

Grotkopp, Detlef; Wedemeyer, Karlfried; Brandes, Wilhelm; Scheinpflug, Hans; and Roessler, Peter, to Bayer Aktiengesellschaft. Combating pests with 1,1-dimethyl-indan-4-yl N-alkyl-carbamic acid esters. 4,316,912, Cl. 424-300.000.

Grotnes Metalforming Systems, Inc.: *See*—
Fencl, Vernon R.; and Javorik, Laszlo, 4,316,377, Cl. 72-189.000.

Groves, Stanley E.: *See*—
Shaw, Pern; and Groves, Stanley E., 4,317,053, Cl. 307-269.000.

Gruss, Edward G.; and Tietze, Armin R., to International Business Machines Corporation. Foil recording disk structures. 4,317,150, Cl. 360-135.000.

Gryskiewicz, Gregory A., to UOP Inc. Method of making slotted well screen. 4,317,023, Cl. 219-121.0LN.

GTE Automatic Electric Laboratories, Inc.: *See*—
Getgen, Lawrence E., 4,317,194, Cl. 370-121.000.

GTE Products Corporation: *See*—
Alberts, Steven L., 4,317,056, Cl. 307-350.000.

GTE Sylvania Canada Limited: *See*—
Nattel, William, 4,316,999, Cl. 174-65.00R.

Gude, Fritz; Haferkorn, Herbert; and Schulde, Felix, to Chemische Werke Huls Aktiengesellschaft. Copolymer of maleic anhydride, dicyclopentadiene and vinylcyclohexene and its use as anionic paper surface sizing material. 4,316,977, Cl. 526-272.000.

Guerbet, Francois. Device for transforming an alternating current to a direct current, and application thereof to the charging of storage batteries. 4,317,075, Cl. 320-53.000.

Guerin, Frank: *See*—
Antoshkiw, Thomas; Cannalonga, Marco A.; and Guerin, Frank, 4,316,917, Cl. 426-540.000.

Guido, Jurgen; and Binzer, Norbert. Lifting keel for sporting sail boats. 4,316,425, Cl. 114-141.000.

Guigues, Francois; Peris Y Saborit, Gilles; and Borrod, Guy, to Philagro. 2-Phenyl-5,6-dihydro-4-pyrone derivatives and herbicidal compositions in which they are present. 4,316,737, Cl. 71-88.000.

Guillemin, Roger C. L.; Ling, Nicholas C.; Esch, Fred S.; Bohlen, Peter; and Brazeau, Paul E., Jr., to Salk Institute for Biological Studies, The. Extended N-terminal somatostatin. 4,316,891, Cl. 424-177.000.

Guinet, Yves M., to L'Etat Francais, Represente par le Secretaire d'Etat aux Postes et Telecommunications et a la Telediffusion (Centre National d'Etudes des Telecommunication); and des Etablissement Public de Diffusion Dit "Telediffusion de France". System for the diffusion of data. 4,317,132, Cl. 358-142.000.

Gullickson, Russell C. Stove construction. 4,316,444, Cl. 126-77.000.

Gulliksen, John E.: *See*—
Richards, Raymond R.; and Gulliksen, John E., 4,317,162, Cl. 362-106.000.

Gunderson, Norman R., to American Electronics, Inc. Adjustable automatic surveillance camera. 4,316,655, Cl. 352-166.000.

Gutierrez, Luiz F.: *See*—
Cullis, Herbert M.; and Gutierrez, Luiz F., 4,316,576, Cl. 233-26.000.

Guttmann, Andrew T.; and Grasselli, Robert K., to Standard Oil Co., The. Molybdenum-promoted antimony phosphate oxide complex catalysts also containing at least one of bismuth and tellurium. 4,316,856, Cl. 260-465.300.

Guyomard, Daniel, to Helic Van Cauwenberghe. Process for the application of an anti-corrosive coating upon metallic objects, especially bottles for liquefied gas. 4,316,939, Cl. 428-413.000.

Guzik, Didier, to Fives-Cail Babcock. Gyratory crusher. 4,316,585, Cl. 241-211.000.

Gyuros, Janos: *See*—
Somos, Andras; Turi, Istvan; Zatyko, Ferenc; Gyuros, Janos; and Borsody, Laszlo, 4,316,450, Cl. 126-432.000.

H. L. Blachford, Limited: *See*—
Blachford, John, 4,316,852, Cl. 260-414.000.

H. R. Electronics Company: *See*—
Levasseur, Joseph L., 4,316,532, Cl. 194-1.00N.

Haefely, Willy: *See*—
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,316,839, Cl. 260-239.30T.

Haferkorn, Herbert: *See*—
Gude, Fritz; Haferkorn, Herbert; and Schulde, Felix, 4,316,977, Cl. 526-272.000.

Hagedorn, Ferdinand: *See*—
Schenk, Wolfgang; Blank, Heinz U.; Hagedorn, Ferdinand; and Evertz, Werner, 4,316,862, Cl. 260-543.00R.

Hagiwara, Miyuki: *See*—
Hosoi, Fumio; Sasaki, Takashi; Hagiwara, Miyuki; Kasai, Noboru; Araki, Kunio; and Hirano, Takayuki, 4,316,783, Cl. 204-159.180.

Hallgren, Leif: *See*—
Lundmark, Signar; and Hallgren, Leif, 4,316,679, Cl. 405-303.000.

Halliburton Company: *See*—
Burnham, John W., 4,316,810, Cl. 252-8.55R.

Hallum, Morris M. Agricultural vehicle for forming water rings. 4,316,509, Cl. 172-297.000.

Hammann, Ingeborg: *See*—
Fuchs, Rainer; Hammann, Ingeborg; and Stendel, Wilhelm, 4,316,913, Cl. 424-304.000.
Stetter, Jorg; Homeyer, Bernhard; Hammann, Ingeborg; and Elbe, Hans-Ludwig, 4,316,910, Cl. 424-298.000.

Hammerton-Fraser, Allan M., to National Research Development Corporation. Patient ventilators. 4,316,458, Cl. 128-205.240.

Hammond, Thomas J.; and Northrup, Karl A., to Xerox Corporation. Gaseous discharge lamp having novel electrode mountings. 4,317,066, Cl. 313-493.000.

Hancock, Roger I.; and Morrison, Kathleen M., to Imperial Chemical Industries Limited. Detergent composition. 4,316,812, Cl. 252-99.000.

Hansen, Christian B.: *See*—
Hansen, Gunnar L.; and Hansen, Christian B., 4,316,707, Cl. 418-60.000.

Hansen, Gunnar L.; and Hansen, Christian B., to Danfoss A/S. Gerotor with valve plate attached to rotor. 4,316,707, Cl. 418-60.000.

Hansen, Jens S.: *See*—
Goof, Sven K. L.; and Hansen, Jens S., 4,317,072, Cl. 318-138.000.

Hanus, Helfried; Winkler, Uwe; and Kemmel, Patrice J., to Pfaff Haushaltmaschinen GmbH. Pulse generator for variable-speed drives. 4,317,032, Cl. 250-231.0SE.

Hara, Toshitami: *See*—
Shirato, Yoshiaki; Takatori, Yasushi; Hara, Toshitami; Nishimura, Yukuo; and Takahashi, Michiko, 4,317,124, Cl. 346-140.00R.

Harada, Mikio; Tachibana, Kan-ichi; Uchida, Akio; and Saitoh, Takashi. Surge absorber. 4,317,155, Cl. 361-120.000.

Harder, Kenneth J. Educational algebra board game. 4,316,612, Cl. 273-272.000.

Hardman, Michael P.: *See*—
Lammiman, Steven A.; and Hardman, Michael P., 4,316,505, Cl. 166-293.000.

Harnischfeger Corporation: *See*—
Dechantsreiter, Max J., 4,316,528, Cl. 187-9.00E.

Harpster, Anthony B. Clutch lockout latch. 4,316,531, Cl. 192-114.00R.

Harrington, William S.; and Farley, Richard T. Window frame and method of assembly thereof. 4,316,352, Cl. 52-656.000.

Harris Corporation: *See*—
Tompkins, Elliot N., 4,317,137, Cl. 358-286.000.

Harris, Dwight. Nail driving impact hammer. 4,316,513, Cl. 173-91.000.

Harris, Elbert E.: *See*—
Thorsett, Eugene D.; Patchett, Arthur A.; Harris, Elbert E.; and Maycock, Alan L., 4,316,896, Cl. 424-200.000.

Harris, Sammy E.: *See*—
Walthall, Bobby K.; and Harris, Sammy E., 4,316,588, Cl. 242-129.620.

Harris, Virgil W. Skill marble game. 4,316,613, Cl. 273-401.000.

Harrison, John M., to Small World Exchange, Inc. Telephone-conferencing method and apparatus with monitor-only access. 4,317,007, Cl. 179-18.0BC.

Harrison, William H., to Donald L. Morton & Associates. Portable body electrode. 4,316,453, Cl. 128-1.300.

Hartig, Alfred; and Beckermann, Harald, to Ruhrtal Elektrizitats-Gesellschaft Hartig GmbH & Co. Circuit arrangement for the processing of information. 4,317,167, Cl. 364-185.000.

Hartman, George W.: *See*—
Bryan, T. James; Hartman, George W.; and Wilson, Arthur G., 4,317,138, Cl. 358-291.000.

Hartnell, Dale A. Hanging tool tray. 4,316,545, Cl. 211-60.00T.

Harvey-Westbury Corp.: *See*—
Trattner, Burton C., 4,317,107, Cl. 340-52.00R.

Hashimoto, Teiji: *See*—
Tosaka, Yoichi; Hashimoto, Teiji; and Tezuka, Nobuo, 4,316,662, Cl. 354-241.000.

Hashimoto, Yukio: *See*—
Hirata, Tadashi; Hashimoto, Yukio; Ogasa, Takehiro; Kobayashi, Shigeru; Matsukuma, Ikuo; and Kimura, Kazuo, 4,316,958, Cl. 435-119.000.

Hassall, Cedric H.: *See*—
Broadhurst, Michael J.; Hassall, Cedric H.; and Thomas, Gareth J., 4,316,985, Cl. 549-39.000.

Hatfield, James R.: *See*—
Burns, Edward J.; and Hatfield, James R., 4,316,811, Cl. 252-88.000.

Hattori, Tadashi: *See*—
Yamaguchi, Hiroaki; Hattori, Tadashi; and Ootsuka, Yoshinori, 4,316,440, Cl. 123-428.000.

Hawkins, James M.: *See*—
McIntire, John M.; Hawkins, James M.; and Vachon, Raymond N., 4,316,929, Cl. 428-262.000.

Hayashi, Masaharu; and Ueda, Kouichi, to Kabushiki Kaisha Tomoku. Paperboard feeding apparatus. 4,316,607, Cl. 271-151.000.

Hayes, Jess W. Magnifying device for use with a triangular rule. 4,316,330, Cl. 33-488.000.

Hayes, Robert A.: *See*—
Hergenrother, William L.; Schwarz, Richard A.; Ambrose, Richard J.; and Hayes, Robert A., 4,316,967, Cl. 525-111.000.

Hayes, William V.: *See*—
Skach, Allen G.; Childress, David L.; and Hayes, William V., 4,316,708, Cl. 425-73.000.

Head, Victor P., to Fischer & Porter Company. Multiple velocity traverse flow rate measuring technique. 4,317,178, Cl. 364-510.000.

Heath, John M.: *See*—
Duggan, William R.; and Heath, John M., 4,316,328, Cl. 30-389.000.

Hebert, Kenneth B. Animal washing stand. 4,316,433, Cl. 119-158.000.

Hecker, Eric: *See*—
Heim, Ulrich; and Hecker, Eric, 4,316,380, Cl. 73-23.000.

Hegemann, Karl-Rudolf; Kautz, Johannes W.; and Weissert, Helmut, to Gottfried Bischoff Bau Kompl. Gasreinigungs- und Wasserruckkuhlanlagen GmbH & Co. KG. Annular-gap washer including electrode means. 4,316,727, Cl. 55-107.000.

Heidt, Peter C. Floating power generation assemblies and methods. 4,316,704, Cl. 417-100.000.

Heim, Ulrich; and Hecker, Eric, to Dragerwerk Aktiengesellschaft. Method for determining the alcohol content in breathing air. 4,316,380, Cl. 73-23.000.

Helic Van Cauwenberghe: *See*—
Guyomard, Daniel, 4,316,939, Cl. 428-413.000.

Helm, Percy R.; and Morrow, James G., Sr., to Manitowoc Company, Inc., The. Concentric ring segment supported lift crane. 4,316,548, Cl. 212-196.000.

Henderson, John G. N.; and Wine, Charles M., to RCA Corporation. Channel identification apparatus useful in a sweep type tuning system. 4,317,225, Cl. 455-158.000.

Hendrickson, Melvin C., to Zenith Radio Corporation. Television receiver having multiplexed phase lock loop tuning system. 4,317,228, Cl. 455-183.000.

Hengartner, Urs O.: *See*—
Batcho, Andrew D.; Hengartner, Urs O.; Leimgruber, Willy; Scott, John W.; and Valentine, Donald, Jr., 4,316,847, Cl. 260-326.460.

Henrickson, Mary J. Invertible outerwear garment. 4,316,288, Cl. 2-88.000.

Henry, James W., to Eastman Kodak Company. Process for removing impurities from polymer solutions. 4,316,867, Cl. 264-169.000.

Henschel, Claude: *See*—
DeCristofaro, Nicholas J.; and Henschel, Claude, 4,316,573, Cl. 228-263.00R.

Hensway, Inc.: *See*—
Hurley, George L., III, 4,316,552, Cl. 220-19.000.

Herbstman, Sheldon, to Texaco Inc. Gasoline and alcohol blends. 4,316,724, Cl. 44-56.000.

Hergenrother, William L.; Schwarz, Richard A.; Ambrose, Richard J.; and Hayes, Robert A., to Firestone Tire & Rubber Company, The. Amine terminated polymers and the formation of block copolymers. 4,316,967, Cl. 525-111.000.

Hermann Berstorff Maschinenbau GmbH: *See*—
Koch, Klaus, 4,316,873, Cl. 422-112.000.

Hermanson, Gerald P., to Dayron Corporation. Fuze. 4,316,414, Cl. 102-247.000.

Herriott, Ray G. Handgun having interchangeable barrels. 4,316,339, Cl. 42-59.000.

Herron, John R.: *See*—
Bailey, James R.; and Herron, John R., 4,316,647, Cl. 339-91.00R.

Hewlett-Packard Company: *See*—
Potter, Ronald W., 4,317,092, Cl. 333-165.000.
Woodruff, Terry A., 4,316,381, Cl. 73-27.00R.
Woodruff, Terry A., 4,316,382, Cl. 73-27.00R.

Hexcel Corporation: *See*—
Liegeois, Jean Marie C. G., 4,316,457, Cl. 128-156.000.

Heybourn, Frank: *See*—
Hinchcliffe, Dennis; Heybourn, Frank; and Luddington, Eric A., 4,316,754, Cl. 198-347.000.

Hi-Mark Industries, Inc.: *See*—
Turner, Charles E., 4,316,676, Cl. 403-260.000.

Hicks, Versal C. Solar energy collector. 4,316,451, Cl. 126-440.000.

Hild, Melvin O. Sun shield for a hard hat. 4,316,289, Cl. 2-191.000.

Hildebrand, David B.: *See*—
Caruso, Michael J.; Hildebrand, David B.; and Ohri, Kul B., 4,317,054, Cl. 307-297.000.

Hilscher-Clarke Electric Co.: *See*—
Price, Arthur L., 4,317,076, Cl. 323-210.000.

Hinai, Mamoru: *See*—
Wada, Kenichi; and Hinai, Mamoru, 4,317,170, Cl. 364-200.000.

Hinchcliffe, Dennis; Heybourn, Frank; and Luddington, Eric A., to Molins Limited. Handling rod-like articles. 4,316,754, Cl. 198-347.000.

Hindin, Eugene; Cripe, Alan R.; and Cripe, Christopher A., to Bi-Modal Corporation. Convertible rail highway semi-trailer air controlled suspension shifting system. 4,316,418, Cl. 105-215.00C.

Hinds, Robert S. Segmented elastic cable exerciser bar. 4,316,610, Cl. 272-137.000.

Hing, Peter, to Thorn Electrical Industries Limited. Sealing of ceramic and cermet parts, sealing material therefor and ceramic seal obtained. 4,316,936, Cl. 428-325.000.

Hipsher, Gary L.: *See*—
Burk, Michael D.; Hipsher, Gary L.; and Nicoles, Gregory M., 4,316,643, Cl. 308-26.000.

Hirakawa, Tadashi; Sasashige, Hiroaki; Takenaka, Hiroyuki; and Katayama, Keiichi, to Mitsubishi Jukogyo Kabushiki Kaisha. Single facer. 4,316,761, Cl. 156-472.000.

Hiramatu, Teruo: *See*—
Masui, Takeshi; Masui, Yoshiro; Hiramatu, Teruo; and Yamada, Tomisabro, 4,316,376, Cl. 72-161.000.

Hirano, Takayuki: *See*—
Hosoi, Fumio; Sasaki, Takashi; Hagiwara, Miyuki; Kasai, Noboru; Araki, Kunio; and Hirano, Takayuki, 4,316,783, Cl. 204-159.180.

Hirata, Tadashi; Hashimoto, Yukio; Ogasa, Takehiro; Kobayashi, Shigeru; Matsukuma, Ikuo; and Kimura, Kazuo, to Kyowa Hakko Kogyo Co., Ltd. Process for producing optically active cephalosporin analogs. 4,316,958, Cl. 435-119.000.

Hirschorn, Martin, to Industrial Acoustics Company, Inc. Acoustic filter silencer. 4,316,522, Cl. 181-224.000.

Hisano, Katsukuni: *See*—
Ninomiya, Satoshi; Yamachi, Yasuhiro; Hisano, Katsukuni; Arie, Ryosuke; Kashiwahara, Katsuto; and Kuwashima, Hidesumi, 4,316,362, Cl. 60-646.000.

Hishii, Masao: *See*—
Nagai, Akio; Nagai, Haruhiko; and Hishii, Masao, 4,317,090, Cl. 372-58.000.

Hitachi, Ltd.: *See*—
Kawakami, Hideaki; Kitajima, Masaaki; Izaki, Naoyuki; and Nagae, Yoshiharu, 4,317,115, Cl. 340-784.000.
Kita, Hisanao; Karatsu, Yoshinori; Nakazaki, Takamitsu; and Akutsu, Yoji, 4,317,022, Cl. 219-121.0EU.
Maejima, Hideo; and Ohnuma, Kunihiko, 4,317,171, Cl. 364-200.000.
Ninomiya, Satoshi; Yamachi, Yasuhiro; Hisano, Katsukuni; Arie, Ryosuke; Kashiwahara, Katsuto; and Kuwashima, Hidesumi, 4,316,362, Cl. 60-646.000.
Suzuki, Atsushi; Urabe, Koichi; Yamada, Hiromichi; and Kohno, Hideki, 4,317,037, Cl. 250-367.000.
Toya, Mitsuo, 4,317,221, Cl. 455-76.000.
Wada, Kenichi; and Hinai, Mamoru, 4,317,170, Cl. 364-200.000.
Yoshida, Isao; Nagata, Minoru; Ochi, Shikayuki; and Katto, Hisao, 4,317,055, Cl. 307-304.000.

Hlousek, Jaroslav: *See*—
Winkler, Jiri; Cibulka, Josef; Bryksi, Jan; Jelinek, Richard; Krtek, Jan; Mickal, Vladimir; Hlousek, Jaroslav; and Kondr, Milan, 4,317,166, Cl. 363-138.000.

Hoagland, John C.: *See*—
Esposito, Robert A.; Valego, Frederick F., Jr.; and Hoagland, John C., 4,316,868, Cl. 264-171.000.

Hoar, Russell A. Water supported wind actuated power generating assembly. 4,316,361, Cl. 60-398.000.

Hochiki Corporation: *See*—
Honma, Hiroshi, 4,317,113, Cl. 340-630.000.

Hocking, David: *See*—
Jepson, Walter B.; Riley, Peter W.; and Hocking, David, 4,316,798, Cl. 209-223.00R.

Hodgkinson, Joseph B.; and Branch, Geoffrey H., to Pilkington Brothers Limited. Sheet transfer apparatus. 4,316,565, Cl. 225-99.000.

Hoechst Aktiengesellschaft: *See*—
Arndt, Otto; and Tronich, Wolfgang, 4,316,861, Cl. 260-543.00F.
Holst, Arno; and Perplies, Eberhard, 4,316,982, Cl. 536-88.000.
Koblo, Jochen; and von dem Bussche, Gotz, 4,317,026, Cl. 219-216.000.
Paszthory, Emmerich; Seifert, Karl G.; Zimmermann, Vincenz; and Nestler, Hans J., 4,316,993, Cl. 568-637.000.

Hoehn, Marvin M.: *See*—
Michel, Karl H.; and Hoehn, Marvin M., 4,316,959, Cl. 435-122.000.

Hoff, Stephen J., to Hoffco, Inc. Combined flywheel and clutch mechanism for lawn mower blade. 4,316,355, Cl. 56-11.300.

Hoffco, Inc.: *See*—
Hoff, Stephen J., 4,316,355, Cl. 56-11.300.

Hoffman-La Roche Inc.: *See*—
Antoshkiw, Thomas; Cannalonga, Marco A.; and Guerin, Frank, 4,316,917, Cl. 426-540.000.
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,316,839, Cl. 260-239.30T.

Hoffmann-La Roche Inc.: *See*—
Batcho, Andrew D.; Hengartner, Urs O.; Leimgruber, Willy; Scott, John W.; and Valentine, Donald, Jr., 4,316,847, Cl. 260-326.460.
Bollag, Werner; and Wyss, Pierre-Charles, 4,316,983, Cl. 536-4.000.
Broadhurst, Michael J.; Hassall, Cedric H.; and Thomas, Gareth J., 4,316,985, Cl. 549-39.000.
Lotz, Wolfgang, 4,316,897, Cl. 424-244.000.
Rahm, Juerg; and Schulz, Peter, 4,316,872, Cl. 422-102.000.

Hofsass, Peter. Heat switch. 4,317,097, Cl. 337-89.000.

Hohman, Charles M.: *See*—
Propster, Mark A.; and Hohman, Charles M., 4,316,732, Cl. 65-27.000.
Holmberg, Richard. Energy producing apparatus and method. 4,317,046, Cl. 290-1.00R.
Holst, Arno; and Perplies, Eberhard, to Hoechst Aktiengesellschaft. Process for reducing the viscosity of cellulose ethers by means of ozone and application thereof. 4,316,982, Cl. 536-88.000.
Holyoke, Caleb W., Jr., to Du Pont de Nemours, E. I., and Company. Ureidosulfenyl carbamate nematicides. 4,316,911, Cl. 424-298.000.
Homeyer, Bernhard: *See*—
Stetter, Jorg; Homeyer, Bernhard; Hammann, Ingeborg; and Elbe, Hans-Ludwig, 4,316,910, Cl. 424-298.000.
Hommel, Richard O.; and Klimas, David, to O. Hommel Company, The. Leadless glaze composition made with alkaline earth molybdenate. 4,316,963, Cl. 501-14.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Nagatsuma, Nobuyoshi, 4,316,374, Cl. 72-91.000.
Yamamoto, Hitoshi; Watanabe, Masaki; and Koizumi, Shinichi, 4,316,520, Cl. 180-215.000.
Honeywell Inc.: *See*—
Acker, William F., 4,317,080, Cl. 328-151.000.
Adams, John T.; Kompelien, Arlon D.; Nelson, Marvin D.; and Pinckaers, B. Hubert, 4,316,577, Cl. 236-46.00R.
Denny, Richard W.; and Diddens, Paul A., 4,317,018, Cl. 219-216.000.
Mueller, Dale A.; Ruminsky, Robert T.; Serber, Stephen L.; and Wolfgram, Rodger C., 4,316,365, Cl. 62-151.000.
Sedalis, Patrick A., 4,317,201, Cl. 371-38.000.
Honeywell Information Systems Inc.: *See*—
Panepinto, William, Jr.; Miu, Ming T.; Nibby, Chester M., Jr.; and Shen, Jian-Kuo, 4,317,169, Cl. 364-200.000.
Honma, Hiroshi, to Hochiki Corporation. Photoelectric smoke sensor. 4,317,113, Cl. 340-630.000.
Hooker Chemicals & Plastics Corp.: *See*—
Prescott, Thomas J.; and Wetzel, Raymond L., 4,316,751, Cl. 148-6.15Z.
Hopper, James A., to American Sterilizer Company. Method and apparatus for processing fluids. 4,316,726, Cl. 55-89.000.
Horton, Robert A., to Precision Metalsmiths, Inc. Investment shell molding materials and processes. 4,316,498, Cl. 164-519.000.
Hosken, Donald H. Reflector assembly with enhanced visibility. 4,316,651, Cl. 350-99.000.
Hosoi, Fumio; Sasaki, Takashi; Hagiwara, Miyuki; Kasai, Noboru; Araki, Kunio; and Hirano, Takayuki, to Japan Atomic Energy Research Institute. Process for modifying a shaped polyethylene. 4,316,783, Cl. 204-159.180.
Houch, John C.: *See*—
Kimball, Charles D.; and Houch, John C., 4,316,895, Cl. 424-177.000.
Hovind, Leif; and Fladby, Tron-Halvard, to A/S Akers Mek. Verksted. Method and apparatus for deaerating liquid. 4,316,725, Cl. 55-41.000.
Howell, Michael E., to Illinois Water Treatment Company. Filter. 4,316,802, Cl. 210-95.000.
Hoy, Harold D.: *See*—
Mac Lean, John P.; Cantwell, J. Edward; Brown, John D.; and Hoy, Harold D., 4,316,729, Cl. 55-459.00R.
Hoyerman, William H. Mechanism for transferring certified weights from and into a vehicle. 4,316,696, Cl. 414-542.000.
Hsu, Sheng T., to RCA Corporation. Multi-mode circuit. 4,317,110, Cl. 340-825.910.
Hubbard, James H.: *See*—
Botte, Anthony J.; Hubbard, James H.; Robbins, Wayne E.; and Spivey, Paul R., 4,317,203, Cl. 371-60.000.
Hubele, Adolf: *See*—
Kunz, Walter; Eckhardt, Wolfgang; and Hubele, Adolf, 4,316,909, Cl. 424-279.000.
Huber, Manfred, to Bayerische Motoren Werke AG. Digital indicating installation for motor vehicles. 4,317,106, Cl. 340-52.00F.
Hudson's Bay Oil and Gas Company Limited: *See*—
Panenka, Jaroslav R.; Pavlik, Bohuslav; and Olson, Daniel P., 4,317,033, Cl. 250-253.000.
Huebotter, Otto H. Method and apparatus for holding the pincer carrying leg of a crab for splitting the leg longitudinally. 4,316,306, Cl. 17-52.000.
Huey, Larry J.: *See*—
Lin, David C. K.; and Huey, Larry J., 4,316,731, Cl. 65-5.000.
Hughes, Brian T.; Vokes, John C.; and Wight, David R., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Field effect devices and their fabrication. 4,317,125, Cl. 357-15.000.
Hughes, Patrick M., to Shell Oil Company. Blends of butene-1-ethylene copolymer and polypropylene. 4,316,970, Cl. 525-240.000.
Hughes, Peter S. Transducer and method for passively measuring thermal radiation fluence. 4,316,387, Cl. 73-190.00H.
Hughes, Richard H., to RCA Corporation. Color picture tube having an improved electron gun with expanded lenses. 4,317,065, Cl. 313-414.000.
Hughes, Robert D.; and Brazell, James, to Coca-Cola Company, The. Container deposit refund system. 4,316,533, Cl. 194-4.00C.
Hughes Tool Company: *See*—
Pessier, Rudolph C. O., 4,316,515, Cl. 175-372.000.
Hunkeler, Walter: *See*—
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,316,839, Cl. 260-239.30T.
Hunt, Helen M. Athletic shoe including stiffening means for supporting the rear portion of the first metatarsal bone. 4,316,334, Cl. 36-91.000.
Huot-Marchand, Daniel; and Zangiacomi, Fernand, to France Ebauches S.A. System for mounting the coil of the motor in an electric watch. 4,317,187, Cl. 368-88.000.
Hurley, George L., III, to Hensway, Inc. Wire egg case. 4,316,552, Cl. 220-19.000.
Hurst, George P. Connector for loaded wire rope. 4,316,307, Cl. 24-31.00R.
Hutchings, Thomas J.: *See*—
Grant, David C., Jr.; and Hutchings, Thomas J., 4,317,089, Cl. 372-94.000.
Hutter, Ernest, to United States of America, Energy. Liquid-metal-cooled reactor. 4,316,770, Cl. 376-175.000.
Ibuki Kogyo Co., Ltd.: *See*—
Shintaku, Yoshishige, 4,317,009, Cl. 179-115.50H.
ICM Cassettes Merchandiser Limited: *See*—
Stranders, Rolf, 4,316,589, Cl. 242-197.000.
Ida, Masatoshi: *See*—
Suzuki, Takeomi; Ida, Masatoshi; and Kenjyo, Hideyuki, 4,316,657, Cl. 354-23.00D.
Idel, Karsten; Serini, Volker; Freitag, Dieter; and Fengler, Gerd, to Bayer Aktiengesellschaft. Process for the preparation of tetramethylated bisphenol polycarbonates. 4,316,980, Cl. 528-199.000.
Idel, Vladimir V. Machine for the mechanical working of band saws. 4,316,396, Cl. 76-61.000.
Iijima, Tokuzo; Samejima, Yasushi; Kishimoto, Kazuo; Komabashiri, Takamichi; and Kano, Toshiji, to Kanegafuchi Chemical Industry Company Limited. Cation exchange membranes. 4,316,789, Cl. 204-296.000.
Iijima, Tokuzo; Samejima, Yasushi; Kishimoto, Kazuo; Komabashiri, Takamichi; and Kano, Toshiji, to Kanegafuchi Chemical Industry Company Limited. Cation exchange membranes. 4,316,790, Cl. 204-296.000.
Iizuka, Haruhiko, to Nissan Motor Company, Limited. Internal combustion engine. 4,316,438, Cl. 123-198.00F.
Ikeda, Tomoaki: *See*—
Namiki, Tomizo; Seshimoto, Osamu; Shinozaki, Fumiaki; Nahara, Akira; and Ikeda, Tomoaki, 4,317,123, Cl. 346-135.100.
Illige, John D.: *See*—
Yu, Conrad M.; and Illige, John D., 4,316,786, Cl. 204-223.000.
Illinois Tool Works Inc.: *See*—
Nelson, John F., 4,316,622, Cl. 285-119.000.
Illinois Water Treatment Company: *See*—
Howell, Michael E., 4,316,802, Cl. 210-95.000.
Illk, Donald J.: *See*—
Keyt, F. Gene; and Illk, Donald J., 4,317,136, Cl. 358-256.000.
Ilo Engineering, Inc.: *See*—
Aiello, Samuel, Jr., 4,317,161, Cl. 362-103.000.
Imabayashi, Itaru: *See*—
Kaneko, Kunishige; Tashiro, Mamoru; Takemoto, Nagayasu; Imabayashi, Itaru; and Furukawa, Takashi, 4,316,753, Cl. 148-12.00F.
Imperial Chemical Industries Limited: *See*—
Coffee, Ronald A.; Young, Brian W.; and Middleton, Michael R., 4,316,914, Cl. 424-305.000.
Gilbert, Arthur H., 4,316,857, Cl. 260-465.80D.
Hancock, Roger I.; and Morrison, Kathleen M., 4,316,812, Cl. 252-99.000.
Inamura, Takahiro: *See*—
Suzuki, Minoru; Murakami, Toshiaki; Inamura, Takahiro; Inukai, Takashi; and Enomoto, Youichi, 4,316,785, Cl. 204-192.00S.
Indesit Industria Elettrodomestici Italiana S.p.A.: *See*—
Belisomi, Pietro, 4,317,226, Cl. 455-174.000.
Index-Werke KG Hahn & Tessky: *See*—
Link, Helmut F.; and Waiblinger, Paul, 4,316,398, Cl. 82-2.700.
Industrial Acoustics Company, Inc.: *See*—
Hirschorn, Martin, 4,316,522, Cl. 181-224.000.
Industrie Pirelli Societa per Azioni: *See*—
Bellasio, Aldo; and Brusa, Giulio, 4,316,378, Cl. 72-268.000.
Infante, George J.: *See*—
Schwartz, Jerome; and Infante, George J., 4,317,108, Cl. 340-64.000.
Ing. C. Olivetti & C., S.p.A.: *See*—
Masoero, Roberto, 4,317,111, Cl. 340-347.0DD.
Innerspace Corporation: *See*—
Gongwer, Calvin A., 4,316,478, Cl. 137-14.000.
Inouye, Shigeharu: *See*—
Omoto, Shoji; Itoh, Jiro; Niwa, Tomizo; Shomura, Takashi; Niizato, Tetsutaro; and Inouye, Shigeharu, 4,316,894, Cl. 424-116.000.
Institut Francais du Petrole: *See*—
Bocard, Christian; Delacour, Jacques; and Renault, Philippe, 4,316,804, Cl. 210-671.000.
Le Pennec, Dominique; Commereuc, Dominique; and Chauvin, Yves, 4,316,851, Cl. 260-408.000.
International Business Machines Corporation: *See*—
Anantha, Narasipur G.; and Chang, Augustine W., 4,316,319, Cl. 29-577.00C.
Botte, Anthony J.; Hubbard, James H.; Robbins, Wayne E.; and Spivey, Paul R., 4,317,203, Cl. 371-60.000.
Daughenbaugh, Gerald A.; Koob, Philip W.; Moxley, Arthur E.; and Wallace, Joseph E., 4,317,147, Cl. 360-113.000.
Edwards, Earl G.; Robinson, Jerry T.; and Wilzbach, Bernard L., 4,316,667, Cl. 355-3.0SH.
Elser, Karl H.; and Kerl, Russell R., 4,317,149, Cl. 360-126.000.

Gruss, Edward G.; and Tietze, Armin R., 4,317,150, Cl. 360-135.000.
Mayborg, Charles C.; and Teel, Delbert L., II, 4,316,674, Cl. 400-478.000.
Messina, Benedicto U.; and Silkman, William D., 4,317,168, Cl. 364-200.000.

International Flavors & Fragrances Inc.: *See*—
Pittet, Alan O.; and Muralidhara, Ranya, 4,316,995, Cl. 568-780.000.

International Institute of Differentiation Limited, The: *See*—
Viza, Dimitri, 4,316,962, Cl. 435-241.000.

International Lead Zinc Research Organization, Inc.: *See*—
Kronstein, Max, 4,316,752, Cl. 148-6.160.

International Standard Electric Corporation: *See*—
Spicer, Lyndon R., 4,317,002, Cl. 174-105.00R.

InterNorth, Inc: *See*—
Burns, Edward J.; and Hatfield, James R., 4,316,811, Cl. 252-88.000.

Inukai, Takashi: *See*—
Suzuki, Minoru; Murakami, Tochiaki; Inamura, Takahiro; Inukai, Takashi; and Enomoto, Youichi, 4,316,785, Cl. 204-192.00S.

Ionomet Company, Inc.: *See*—
Masters, Joseph I.; Goldberg, Gershon M.; and Lavine, Jerome M., 4,316,946, Cl. 430-9.000.

Ishibashi, Takao; and Osonoi, Kenjiro, to Osawa Precision Industries, Ltd. Information display arrangement for camera. 4,316,656, Cl. 352-172.000.

Ishida, Koji: *See*—
Saida, Toyoyasu; Shimokawa, Takatatsu; Yanagisawa, Yuzuru; Nagahama, Takashi; and Ishida, Koji, 4,316,767, Cl. 159-47.0UA.

Ishida, Masamitsu: *See*—
Kato, Hisatoyc; Ishida, Masamitsu; and Matsumoto, Seiji, 4,317,179, Cl. 364-515.000.

Ishii, Shiro: *See*—
Kawano, Toshio; and Ishii, Shiro, 4,316,583, Cl. 241-1.000.

Ito, Susumu, to Tokyo Shibaura Denki Kabushiki Kaisha. Induction heating cooking apparatus. 4,317,016, Cl. 219-10.49R.

Itoh, Jiro: *See*—
Omoto, Shoji; Itoh, Jiro; Niwa, Tomizo; Shomura, Takashi; Niizato, Tetsutaro; and Inouye, Shigeharu, 4,316,894, Cl. 424-116.000.

Itoh, Osamu: *See*—
Wakatsuki, Nobuo; and Itoh, Osamu, 4,317,200, Cl. 371-25.000.

Itoh, Teturoh, to Mitsubishi Denki Kabushiki Kaisha. Method and apparatus for electrically cutting work pieces with a wire electrode. 4,317,019, Cl. 219-69.00M.

Itoh, Toshiyuki, to Nissan Motor Company, Limited. Display board type switching device. 4,317,012, Cl. 200-5.00A.

ITT Industries, Inc.: *See*—
Belart, Juan, 4,316,642, Cl. 303-116.000.
Gehlen, Jakob; and Wortmann, Hans, 4,316,530, Cl. 188-73.390.
Schafer, Ernst D., 4,316,639, Cl. 303-6.00C.

Iwamoto, Yoshinao: *See*—
Yamamura, Kazuomi; Fukui, Takasuke; Iwamoto, Yoshinao; Shirasaki, Yuichi; and Fujise, Masayuki, 4,317,079, Cl. 324-326.000.

Iyeta, Motoi, to Nippon Gakki Seizo Kabushiki Kaisha. Pickup arm movement control system for record player. 4,317,190, Cl. 369-33.000.

Izaki, Naoyuki: *See*—
Kawakami, Hideaki; Kitajima, Masaaki; Izaki, Naoyuki; and Nagae, Yoshiharu, 4,317,115, Cl. 340-784.000.

Jacoby, Glenn C. Handled tote apparatus. 4,316,629, Cl. 294-152.000.

Jallas, Michel: *See*—
Bouvet, Jean M.; Berthou, Claude; and Jallas, Michel, 4,316,599, Cl. 251-129.000.

Jandrasi, Frank J., to Tapco International, Inc. Valve having wear-prone parts removable through bonnet area. 4,316,483, Cl. 137-315.000.

Jankiewicz, Walter J. Milli-volt switching device. 4,317,095, Cl. 335-149.000.

Japan Atomic Energy Research Institute: *See*—
Hosoi, Fumio; Sasaki, Takashi; Hagiwara, Miyuki; Kasai, Noboru; Araki, Kunio; and Hirano, Takayuki, 4,316,783, Cl. 204-159.180.

Jastram-Werke GmbH KG: *See*—
Weiss, Friedrich; and Petersen, Fred, 4,316,721, Cl. 440-47.000.

Javorik, Laszlo: *See*—
Fencl, Vernon R.; and Javorik, Laszlo, 4,316,377, Cl. 72-189.000.

Jelinek, Richard: *See*—
Winkler, Jiri; Cibulka, Josef; Bryksi, Jan; Jelinek, Richard; Krtek, Jan; Mickal, Vladimir; Hlousek, Jaroslav; and Kondr, Milan, 4,317,166, Cl. 363-138.000.

Jensen, Ole R. Apparatus for forming a marginally reinforced hole in a thermoplastic sheet material. 4,316,763, Cl. 156-513.000.

Jepson, Walter B.; Riley, Peter W.; and Hocking, David, to English Clays Lovering Pochin & Company Ltd. Separating chamber for a magnetic separator. 4,316,798, Cl. 209-223.00R.

Jerome, Jonathan A., to McDonnell Douglas Corporation. System and method for reproducing pictures and related audio information. 4,317,131, Cl. 358-128.500.

Jett, Earl A. Camera-to-tripod alignment holder. 4,316,592, Cl. 248-187.000.

Jockel, Heinz; Marschner, Friedemann; Moller, Friedrich W.; and Mortel, Hans-Gunter, to Metallgesellschaft, Aktiengesellschaft. Process for producing carbon monoxide and hydrogen from methanol. 4,316,880, Cl. 423-415.00A.

Joel, Amos E., Jr., to Bell Telephone Laboratories, Incorporated. Time division nodal switching network. 4,317,193, Cl. 370-54.000.

Johnson, Jerry L., to Landes Manufacturing Company. Modular container. 4,316,644, Cl. 312-108.000.

Johnson, Paul H.: *See*—
Mills, King L.; and Johnson, Paul H., 4,316,876, Cl. 422-151.000.

Johnson, Raymond E., to Rockwell International Corporation. Rate converting bit stream demultiplexer and multiplexer. 4,317,198, Cl. 370-112.000.

Johnson, Robert N.: *See*—
Barth, Bruce P.; Johnson, Robert N.; Mayer, Walter P.; and Pinkston, Bruce H. W., 4,316,875, Cl. 422-133.000.

Johnson, Thomas A.: *See*—
Ford, Michael E.; and Johnson, Thomas A., 4,316,840, Cl. 260-239.0BC.
Ford, Michael E.; and Johnson, Thomas A., 4,316,841, Cl. 260-239.0BC.

Jolly, Stuart T.; and Paczkowski, John P., to RCA Corporation. Vapor phase deposition apparatus. 4,316,430, Cl. 118-725.000.

Jonath, Eberhard, to Mettler Instrumente AG. Weighing scale with improved zero correction. 4,316,517, Cl. 177-25.000.

Jonath, Eberhard, to Mettler Instrumente AG. Automatic zero correction apparatus for weighing balances. 4,316,518, Cl. 177-25.000.

Jones, David A., to G. D. Searle & Co. 2,6-C-Dimethyltyrosine[1]-D-amino acid[2]-ε-amino caproic and γ aminobutyric acid[3] derivatives of methionine enkephalin. 4,316,892, Cl. 424-177.000.

Jysky, Goran H., to Atlas Copco AB. Method of binding dust created when drilling rock with a drilling rod. 4,316,514, Cl. 175-66.000.

Kabushiki Kaisha Kaneda Kikai Seisakusho: *See*—
Tachiki, Tatsuo, 4,316,669, Cl. 355-91.000.

Kabushiki Kaisha Komatsu Seisakusho: *See*—
Yokoyama, Masao, 4,316,697, Cl. 414-694.000.

Kabushiki Kaisha Suwa Seikosha: *See*—
Ushikoshi, Kenichi, 4,317,188, Cl. 368-293.000.

Kabushiki Kaisha Tomoku: *See*—
Hayashi, Masaharu; and Ueda, Kouichi, 4,316,607, Cl. 271-151.000.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See*—
Fujitani, Yoshiyasu; Muraki, Hideaki; Kondoh, Shiroh; Tomita, Makoto; Yokota, Kouji; Sobukawa, Hideo; and Nakamura, Tamotsu, 4,316,622, Cl. 252-462.000.

Kaegebein, Daniel P., to TX RX Systems, Inc. Bi-directional filter system for amplifying signals in separate frequency bands. 4,317,216, Cl. 455-16.000.

Kafka, Charles F.; and Kafka, Robert S., to Meacham Marine Products, Inc. Flush hasp having dependent latching portion, and optionally usable with padlock. 4,316,626, Cl. 292-285.000.

Kafka, Robert S.: *See*—
Kafka, Charles F.; and Kafka, Robert S., 4,316,626, Cl. 292-285.000.

Kah, Carl L. C., Jr. Sequencing valve. 4,316,480, Cl. 137-119.000.

Kahan, Hillard M.: *See*—
Wolf, Irving W.; Stafford, Michael K.; Kahan, Hillard M.; Acebo, William F.; Scott, Lawrence M.; and Lee, Yu C., 4,316,738, Cl. 75-0.5BA.

Kahn, Hervey, to Alan I. Gerald Corporation. Safety mechanism for firearms. 4,316,340, Cl. 42-66.000.

Kako, Hiroyoshi: *See*—
Kobayashi, Nobuo; and Kako, Hiroyoshi, 4,316,582, Cl. 239-692.000.

Kaku, Takashi: *See*—
Fujimura, Noriaki; Kinoshita, Tsuneo; Aono, Tadashi; Kaku, Takashi; and Tanaka, Yasuya, 4,317,207, Cl. 375-19.000.

Kaltenbach & Voight GmbH & Co.: *See*—
Beier, Stefan; and Gmeinder, Hermann, 4,317,112, Cl. 340-568.000.

Kamber, Bruno; Rink, Hans; and Sieber, Peter, to Ciba-Geigy Corporation. Peptides and processes for the manufacture thereof. 4,316,890, Cl. 424-177.000.

Kaminstein, Bernard. Non-slip material for the hand. 4,316,926, Cl. 428-137.000.

Kamishita, Kazuhiko: *See*—
Kamishita, Takuzo; and Kamishita, Kazuhiko, 4,316,887, Cl. 424-81.000.

Kamishita, Takuzo; and Kamishita, Kazuhiko, to Toko Yakuhin Kogyo Kabushiki Kaisha. Composition for topical application and method for preparing the same. 4,316,887, Cl. 424-81.000.

Kanegafuchi Chemical Industry Company Limited: *See*—
Iijima, Tokuzo; Samejima, Yasushi; Kishimoto, Kazuo; Komabashiri, Takamichi; and Kano, Toshiji, 4,316,789, Cl. 204-296.000.
Iijima, Tokuzo; Samejima, Yasushi; Kishimoto, Kazuo; Komabashiri, Takamichi; and Kano, Toshiji, 4,316,790, Cl. 204-296.000.

Kaneko, Kunishige; Tashiro, Mamoru; Takemoto, Nagayasu; Imabayashi, Itaru; and Furukawa, Takashi, to Nippon Steel Corporation. Method for producing low alloy hot rolled steel strip or sheet having high tensile strength, low yield ratio and excellent total elongation. 4,316,753, Cl. 148-12.00F.

Kano, Toshiji: *See*—
Iijima, Tokuzo; Samejima, Yasushi; Kishimoto, Kazuo; Komabashiri, Takamichi; and Kano, Toshiji, 4,316,789, Cl. 204-296.000.
Iijima, Tokuzo; Samejima, Yasushi; Kishimoto, Kazuo; Komabashiri, Takamichi; and Kano, Toshiji, 4,316,790, Cl. 204-296.000.

Kapitanov, Nikolai N. Surgical apparatus for suturing soft tissues with lengths of suturing material with spicules. 4,316,469, Cl. 128-334.00R.

Kappenhagen, George A., to Westinghouse Electric Corp. Shipping assembly for a hydraulic jack. 4,316,316, Cl. 29-426.100.

Karaktin, Vincent M., to Emerson Electric Co. System and method of mounting a lamp holder on a support. 4,317,164, Cl. 362-432.000.

Karatsu, Yoshinori: *See*—
Kita, Hisanao; Karatsu, Yoshinori; Nakazaki, Takamitsu; and Akutsu, Yoji, 4,317,022, Cl. 219-121.0EU.

Kasai, Masanao: *See*—
Nishigaki, Yuji; Kasai, Masanao; and Okano, Kazumi, 4,316,948, Cl. 430-94.000.

Kasai, Noboru: *See*—
Hosoi, Fumio; Sasaki, Takashi; Hagiwara, Miyuki; Kasai, Noboru; Araki, Kunio; and Hirano, Takayuki, 4,316,783, Cl. 204-159.180.

Kasama, Tsuneo; Fujiyama, Hikaru; Nagaoka, Tadahiko; and Katoh, Masayoshi, to Nissan Motor Co., Ltd.; and Nippon Oil & Fats Co., Ltd. Gas generator utilizing granular silicon carbide as coolant. 4,316,874, Cl. 422-126.000.

Kashima Kagaku, Co.: *See*—
Eguchi, Tsukasa; and Morozumi, Mituharu, 4,316,941, Cl. 428-421.000.

Kashiwahara, Katsuto: *See*—
Ninomiya, Satoshi; Yamachi, Yasuhiro; Hisano, Katsukuni; Arie, Ryosuke; Kashiwahara, Katsuto; and Kuwashima, Hidesumi, 4,316,362, Cl. 60-646.000.

Katayama, Keiichi: *See*—
Hirakawa, Tadashi; Sasashige, Hiroaki; Takenaka, Hiroyuki; and Katayama, Keiichi, 4,316,761, Cl. 156-472.000.

Kato, Hisatoyc; Ishida, Masamitsu; and Matsumoto, Seiji, to Fuji Photo Film Co., Ltd. Method and apparatus for processing a radiographic image. 4,317,179, Cl. 364-515.000.

Kato, Toshikazu: *See*—
Satoh, Ken; Saitou, Sinichi; Kato, Toshikazu; Watanabe, Seizo; Nishiyama, Toyoo; Shimoda, Misao; Shibata, Tutomu; and Kimura, Kenji, 4,316,590, Cl. 242-199.000.

Katoh, Masayoshi: *See*—
Kasama, Tsuneo; Fujiyama, Hikaru; Nagaoka, Tadahiko; and Katoh, Masayoshi, 4,316,874, Cl. 422-126.000.

Katto, Hisao: *See*—
Yoshida, Isao; Nagata, Minoru; Ochi, Shikayuki; and Katto, Hisao, 4,317,055, Cl. 307-304.000.

Kautz, Johannes W.: *See*—
Hegemann, Karl-Rudolf; Kautz, Johannes W.; and Weissert, Helmut, 4,316,727, Cl. 55-107.000.

Kawai, Mituo; Fujita, Takashi; Shirai, Hideo; Nakagawa, Masatoshi; and Abe, Hiroshi, to Tokyo Shibaura Electric Co., Ltd. High damping Fe-Cr-Al alloy. 4,316,743, Cl. 75-124.000.

Kawakami, Hideaki; Kitajima, Masaaki; Izaki, Naoyuki; and Nagae, Yoshiharu, to Hitachi, Ltd. Driving device for matrix-type display panel using guest-host type phase transition liquid crystal. 4,317,115, Cl. 340-784.000.

Kawamoto, Isao: *See*—
Nara, Takashi; Okachi, Ryo; Kawamoto, Isao; Sato, Tomoyasu; and Oka, Tetsuo, 4,316,957, Cl. 435-119.000.

Kawano, Toshio; and Ishii, Shiro, to Onoda Cement Company, Ltd. Demolition agent for brittle materials. 4,316,583, Cl. 241-1.000.

Kawasaki, Atsushi; and Munakata, Yukio, to Pioneer Electronic Corporation. Variable resistor. 4,317,103, Cl. 338-160.000.

Kawashima, Hirokuni: *See*—
Suzuki, Kiyoshi; and Kawashima, Hirokuni, 4,316,947, Cl. 430-94.000.

Kearnes, Roger M.; and Scaramella, Gianni Q. Automatic log processing apparatus and method. 4,316,491, Cl. 144-39.000.

Keaton, Clyde D. Hydraulic continuous press. 4,316,411, Cl. 100-50.000.

Keller, Gerald W.: *See*—
Yaeger, Ronald J.; and Keller, Gerald W., 4,316,367, Cl. 62-238.600.

Kelly, Quentin T. Self-pressurizable portable vessel with faucet connector. 4,316,623, Cl. 285-8.000.

Kelly, Thomas: *See*—
Krober, Hubert D.; and Kelly, Thomas, 4,316,596, Cl. 251-58.000.

Kemmel, Patrice J.: *See*—
Hanus, Helfried; Winkler, Uwe; and Kemmel, Patrice J., 4,317,032, Cl. 250-231.0SE.

Kenjyo, Hideyuki: *See*—
Suzuki, Takeomi; Ida, Masatoshi; and Kenjyo, Hideyuki, 4,316,657, Cl. 354-23.00D.

Kennametal Inc.: *See*—
Taylor, Jack A.; Beach, Wayne H.; and Weyant, Raymond C., Jr., 4,316,636, Cl. 299-92.000.

Kennedy, Joseph P., to University of Akron, The. Novel telechelic polymers and processes for the preparation thereof. 4,316,973, Cl. 525-335.000.

Kennedy, Joseph P.; and Castner, Kenneth F. Synthesis of substituted cyclopentadienes and cyclopentadiene-functionalized polymers. 4,316,978, Cl. 526-348.700.

Kent, John L.: *See*—
Ray, Charles A.; and Kent, John L., 4,316,579, Cl. 239-123.000.

Kenting Earth Sciences Limited: *See*—
Panenka, Jaroslav R.; Pavlik, Bohuslav; and Olson, Daniel P., 4,317,033, Cl. 250-253.000.

Kerekes, Ferenc, to Preussag Aktiengesellschaft. Fluid pressure measuring apparatus for incorporation into a pipeline rising from a well. 4,316,386, Cl. 73-151.000.

Kerl, Russell R.: *See*—
Elser, Karl H.; and Kerl, Russell R., 4,317,149, Cl. 360-126.000.

Kerscher, Wolfgang. Shaking machine, especially for Indian ink writing device. 4,316,672, Cl. 366-212.000.

Kerteszeti Egyetem: *See*—
Somos, Andras; Turi, Istvan; Zatyko, Ferenc; Gyuros, Janos; and Borsody, Laszlo, 4,316,450, Cl. 126-432.000.

Kesseler, Jan A. H.: *See*—
Fitzgerald, John; and Kesseler, Jan A. H., 4,317,060, Cl. 313-113.000.

Ketterer, Stanley J., to Singer Company, The. Anti-haloing throat plate. 4,316,421, Cl. 112-184.000.

Keyt, F. Gene; and Illk, Donald J., to Pitney Bowes Inc. Facsimile system. 4,317,136, Cl. 358-256.000.

Kibblewhite, Ian E.; Boys, John T.; and Tambini, Angelo L., to SPS Technologies, Inc. Impact wrench. 4,316,512, Cl. 173-12.000.

Kikuchi, Mitsuo: *See*—
Seita, Toru; Satoh, Takao; and Kikuchi, Mitsuo, 4,316,781, Cl. 204-98.000.

Kimball, Charles D.; and Houch, John C. Endorphins having placental or pancreatic origin. 4,316,895, Cl. 424-177.000.

Kime, Wellesley R. Energy farm. 4,317,048, Cl. 290-53.000.

Kimura, Kazuo: *See*—
Hirata, Tadashi; Hashimoto, Yukio; Ogasa, Takehiro; Kobayashi, Shigeru; Matsukuma, Ikuo; and Kimura, Kazuo, 4,316,958, Cl. 435-119.000.

Kimura, Kenji: *See*—
Satoh, Ken; Saitou, Sinichi; Kato, Toshikazu; Watanabe, Seizo; Nishiyama, Toyoo; Shimoda, Misao; Shibata, Tutomu; and Kimura, Kenji, 4,316,590, Cl. 242-199.000.

Kimura, Koichi. Artificial fish-gathering underwater reef. 4,316,431, Cl. 119-3.000.

Kimura, Shigeo; and Yamada, Toshihiko, to Sony Corporation. Magnetic recording medium. 4,316,927, Cl. 428-216.000.

Kimura, Takeo: *See*—
Ohmura, Kaoru; Shibasaki, Ichiro; and Kimura, Takeo, 4,316,974, Cl. 525-422.000.

Kinoshita, Tsuneo: *See*—
Fujimura, Noriaki; Kinoshita, Tsuneo; Aono, Tadashi; Kaku, Takashi; and Tanaka, Yasuya, 4,317,207, Cl. 375-19.000.

Kinoshita, Yoshiaki: *See*—
Akune, Mikio; and Kinoshita, Yoshiaki, 4,316,878, Cl. 423-235.000.

Kiowski, John W.; and Rolando, John V., to Electronic Systems Division, Geosource, Inc. Oil well control circuit. 4,316,702, Cl. 417-12.000.

Kirk, Norbert A. Blade housing for cast cutting tool. 4,316,323, Cl. 30-124.000.

Kirkham, John: *See*—
Dinegar, Robert H.; and Kirkham, John, 4,316,412, Cl. 102-202.500.

Kirkpatrick, Robert G.; Snyder, Ronald R.; and Sibley, Lincoln L., Jr., to General Electric Company. Gun bolt for a high rate of fire revolving battery gun. 4,316,403, Cl. 89-12.000.

Kirtley, James L., Jr.: *See*—
Sterling, Thomas L.; and Kirtley, James L., Jr., 4,317,175, Cl. 364-464.000.

Kishimoto, Kazuo: *See*—
Iijima, Tokuzo; Samejima, Yasushi; Kishimoto, Kazuo; Komabashiri, Takamichi; and Kano, Toshiji, 4,316,789, Cl. 204-296.000.
Iijima, Tokuzo; Samejima, Yasushi; Kishimoto, Kazuo; Komabashiri, Takamichi; and Kano, Toshiji, 4,316,790, Cl. 204-296.000.

Kita, Donald A.; and Fenton, Dennis M., to Pfizer Inc. Preparation of 2,5-diketogluconic acid. 4,316,960, Cl. 435-137.000.

Kita, Hisanao; Karatsu, Yoshinori; Nakazaki, Takamitsu; and Akutsu, Yoji, to Hitachi, Ltd. Electron beam welding machine. 4,317,022, Cl. 219-121.0EU.

Kitajima, Masaaki: *See*—
Kawakami, Hideaki; Kitajima, Masaaki; Izaki, Naoyuki; and Nagae, Yoshiharu, 4,317,115, Cl. 340-784.000.

Kitano, Shigeru: *See*—
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Kittelson, David B.: *See*—
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Klass, Donald L.; and Ghosh, Sambhunath, to United Gas Pipe Line Company. Methane production by anaerobic digestion of plant material and organic waste. 4,316,961, Cl. 435-167.000.

Klaus, Kaspar; and Treppesch, Franz. Apparatus for the parking of vehicles on mobile platforms. 4,316,527, Cl. 187-8.710.

Klein, John M. Bulletproof protective plate assembly. 4,316,286, Cl. 2-2.500.

Klieman, Charles H.; and Densmore, Richard M., to Klieman, Charles H. Surgical stapler. 4,316,468, Cl. 128-325.000.

Klimas, David: *See*—
Hommel, Richard O.; and Klimas, David, 4,316,963, Cl. 501-14.000.

Klimowicz, Richard F., to Dresser Industries, Inc. Railway car coupler. 4,316,549, Cl. 213-127.000.

Kloeber, Peter; and Schroeter, Heinz, to Siemens Aktiengesellschaft. Mobile radio system. 4,317,219, Cl. 455-56.000.

Knell, Karl: *See*—
Lenz, Wolfgang; Albenberger, Johann; and Knell, Karl, 4,316,631, Cl. 297-284.000.

Knight, John W., Sr. Garbage compaction truck. 4,316,695, Cl. 414-517.000.

Koba, Yoshinori: *See*—
Suzuki, Shunichi; Koba, Yoshinori; Yamada, Yoshiaki; Aoto, Teruaki; Kuno, Yoriyoshi; and Yokota, Masanobu, 4,316,758, Cl. 156-351.000.

Kobayashi, Masayoshi: *See*—
Sakuranaka, Toru; Kobayashi, Masayoshi; and Nakagawa, Sachio, 4,316,441, Cl. 123-502.000.

Kobayashi, Nobuo; and Kako, Hiroyoshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Device for painting by electrostatic powder spraying. 4,316,582, Cl. 239-692.000.

Kobayashi, Shigeru: *See*—
Hirata, Tadashi; Hashimoto, Yukio; Ogasa, Takehiro; Kobayashi, Shigeru; Matsukuma, Ikuo; and Kimura, Kazuo, 4,316,958, Cl. 435-119.000.

Kobayashi, Toshio, to Nippon Electric Co., Ltd. Single-ended push-pull power amplifier having improved high frequency characteristics. 4,317,081, Cl. 330-268.000.

Kobayashi, Tsukasa: *See*—
Minemura, Norihiro; Toyao, Manabu; Kobayashi, Tsukasa; and Tashiro, Mikio, 4,316,924, Cl. 428-89.000.

Koberstein, Edgar: *See*—
Bozon, Alfred; Koberstein, Edgar; Pletka, Hans-Dieter; and Voelker, Herbert, 4,316,823, Cl. 252-465.000.

Koblo, Jochen; and von dem Bussche, Gotz, to Hoechst Aktiengesellschaft. Developing chamber. 4,317,026, Cl. 219-216.000.

Koch, Klaus, to Hermann Berstorff Maschinenbau GmbH. Apparatus for converting coal to hydrocarbons by hydrogenation. 4,316,873, Cl. 422-112.000.

Kochey, Edward L., to Combustion Engineering, Inc. Furnace heat absorption control. 4,316,420, Cl. 110-347.000.

Kockums Industri AB: *See*—
Petersson, Stefan; and Alstad, Sven O., 4,316,709, Cl. 425-174.80E.

Koehler Manufacturing Co.: *See*—
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Kogan, Lawrence: *See*—
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Kohno, Hideki: *See*—
Suzuki, Atsushi; Urabe, Koichi; Yamada, Hiromichi; and Kohno, Hideki, 4,317,037, Cl. 250-367.000.

Koizumi, Shinichi: *See*—
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Kokusai Denshin Denwa Co. Ltd.: *See*—
Yamamura, Kazuomi; Fukui, Takasuke; Iwamoto, Yoshinao; Shirasaki, Yuichi; and Fujise, Masayuki, 4,317,079, Cl. 324-326.000.

Kolin, George J.: *See*—
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Komabashiri, Takamichi: *See*—
Iijima, Tokuzo; Samejima, Yasushi; Kishimoto, Kazuo; Komabashiri, Takamichi; and Kano, Toshiji, 4,316,789, Cl. 204-296.000.
Iijima, Tokuzo; Samejima, Yasushi; Kishimoto, Kazuo; Komabashiri, Takamichi; and Kano, Toshiji, 4,316,790, Cl. 204-296.000.

Kompelien, Arlon D.: *See*—
Adams, John T.; Kompelien, Arlon D.; Nelson, Marvin D.; and Pinckaers, B. Hubert, 4,316,577, Cl. 236-46.00R.

Kondoh, Shiroh: *See*—
Fujitani, Yoshiyasu; Muraki, Hideaki; Kondoh, Shiroh; Tomita, Makoto; Yokota, Kouji; Sobukawa, Hideo; and Nakamura, Tamotsu, 4,316,822, Cl. 252-462.000.

Kondr, Milan: *See*—
Winkler, Jiri; Cibulka, Josef; Bryksi, Jan; Jelinek, Richard; Krtek, Jan; Mickal, Vladimir; Hlousek, Jaroslav; and Kondr, Milan, 4,317,166, Cl. 363-138.000.

Kongskilde Koncernselskab A/S: *See*—
Andersen, Helge H., 4,316,511, Cl. 172-776.000.

Koob, Philip W.: *See*—
Daughenbaugh, Gerald A.; Koob, Philip W.; Moxley, Arthur E.; and Wallace, Joseph E., 4,317,147, Cl. 360-113.000.

Korwin, Richard M. Pilfer-proof precious metal filings collection box. 4,316,645, Cl. 312-212.000.

Kosarko, Gerald J.: *See*—
Bundschuh, John J.; and Kosarko, Gerald J., 4,316,658, Cl. 354-27.000.

Kovbasjuk, Valentin I.: *See*—
Bazarov, Georgy P.; Kovbasjuk, Valentin I.; Kufa, Emma N.; and Medin, Stanislav A., 4,317,057, Cl. 310-11.000.

Koyama, Hiroaki; Shimizu, Shigeo; and Sekiya, Mituru, to Nippon Kynol Incorporated. Cured novolak fiber-reinforced, chlorinated rubber molded articles having excellent flame-proofness, and process for the preparation thereof. 4,316,969, Cl. 525-145.000.

Kraft, Robert L.: *See*—
England, David C.; Kraft, Robert L.; and Krespan, Carl G., 4,316,986, Cl. 560-184.000.

Kramer, Wolfgang: *See*—
Kranz, Eckart; Kramer, Wolfgang; Buchel, Karl H.; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,316,932, Cl. 424-269.000.

Kranz, Eckart; Kramer, Wolfgang; Buchel, Karl H.; Brandes, Wilhelm; and Frohberger, Paul-Ernst, to Bayer Aktiengesellschaft. Combating fungi with α-azolyl-keto derivatives. 4,316,932, Cl. 424-269.000.

Krapcho, John, to E. R. Squibb & Sons, Inc. Mercaptoacyl derivatives of various 4-substituted prolines. 4,316,905, Cl. 424-274.000.

Krapcho, John: *See*—
Ondetti, Miguel A.; and Krapcho, John, 4,316,906, Cl. 424-274.000.

Kresge, James S.: *See*—
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Krespan, Carl G.: *See*—
England, David C.; Kraft, Robert L.; and Krespan, Carl G., 4,316,986, Cl. 560-184.000.

Kretz, Carl, to Kretztechnik Gesellschaft m.b.H. Method and equipment for plotting section images of objects subjected to ultrasonic examination. 4,316,390, Cl. 73-620.000.

Kretztechnik Gesellschaft m.b.H.: *See*—
Kretz, Carl, 4,316,390, Cl. 73-620.000.

Kristiansen, Odd; and Drabek, Jozef, to Ciba-Geigy Corporation. Pesticidal sulfinylamides. 4,316,908, Cl. 424-277.000.

Krober, Hubert D.; and Kelly, Thomas. Power actuated valve. 4,316,596, Cl. 251-58.000.

Kronstein, Max, to International Lead Zinc Research Organization, Inc. Oxalic acid treatment of carbon steel, galvanized steel and aluminum surfaces. 4,316,752, Cl. 148-6.160.

Krtek, Jan: *See*—
Winkler, Jiri; Cibulka, Josef; Bryksi, Jan; Jelinek, Richard; Krtek, Jan; Mickal, Vladimir; Hlousek, Jaroslav; and Kondr, Milan, 4,317,166, Cl. 363-138.000.

Krupp-Koppers GmbH: *See*—
Wetzel, Rolf, 4,316,741, Cl. 75-42.000.

Kubiak, Robert J. Apparatus for pipetting diluent into a sealed medical container. 4,316,558, Cl. 222-181.000.

Kucera, Joseph B., to Lowell, Rudolph L., a part interest. Round bale handling attachment for a tractor. 4,316,691, Cl. 414-24.500.

Kudelin, Alexandr K.: *See*—
Shlykov, Gennady N.; Zhestkov, Vitaly I.; Tikhonov, Valentin N.; Dyachkov, Vasily M.; and Kudelin, Alexandr K., 4,316,314, Cl. 29-123.000.

Kudo, Bosshi; and Yoshioka, Masamichi, to Agency of Industrial Science and Technology, The. Method for horizontal ribbon crystal growth. 4,316,764, Cl. 156-617.00H.

Kufa, Emma N.: *See*—
Bazarov, Georgy P.; Kovbasjuk, Valentin I.; Kufa, Emma N.; and Medin, Stanislav A., 4,317,057, Cl. 310-11.000.

Kuhlmann, Josef H. Battery cage arrangement for laying hens. 4,316,432, Cl. 119-22.000.

Kunde, Gerhard; Schoen, Siegfried; and Trimmel, Herwig, to Siemens Aktiengesellschaft. Telephone subscriber station. 4,317,233, Cl. 455-606.000.

Kunde, Gerhard; and Schoen, Siegfried, to Siemens Aktiengesellschaft. Telephone subscriber station. 4,317,234, Cl. 455-606.000.

Kuno, Yoriyoshi: *See*—
Suzuki, Shunichi; Koba, Yoshinori; Yamada, Yoshiaki; Aoto, Teruaki; Kuno, Yoriyoshi; and Yokota, Masanobu, 4,316,758, Cl. 156-351.000.

Kunz, Walter; Eckhardt, Wolfgang; and Hubele, Adolf, to Ciba-Geigy Corporation. Fungicidal compositions. 4,316,909, Cl. 424-279.000.

Kunzelman, Richard D. Gas compressor. 4,316,703, Cl. 417-66.000.

Kuo, Charles C. Y., to CTS Corporation. Thick film copper conductor circuits. 4,316,942, Cl. 428-432.000.

Kupf, Lubomir; Adamek, Radomil; and Mursec, Mirko, to Statni vyzkumny ustav materialu. Filter support of plates for filter presses. 4,316,803, Cl. 210-455.000.

Kupper, Walter, to Mettler Instrumente AG. Weighing balance with automatic zero correction. 4,316,516, Cl. 177-25.000.

Kurachi, Shogo; Tamura, Masami; and Ueda, Akio, to Nippondenso Co., Ltd. Solderless heat exchanger. 4,316,503, Cl. 165-175.000.

Kurita, Tokio: *See*—
Yanagawa, Ichiro; Kurita, Tokio; and Nakasu, Kei, 4,316,529, Cl. 188-1.110.

Kuster, Howard L., to B. F. Goodrich Company, The. Apparatus for feeding strips of rubber compositions simultaneously into an extruder. 4,316,570, Cl. 226-176.000.

Kutz, Heinrich: *See*—
Zilges, Franz-Josef; and Kutz, Heinrich, 4,316,373, Cl. 72-45.000.

Kuwashima, Hidesumi: *See*—
Ninomiya, Satoshi; Yamachi, Yasuhiro; Hisano, Katsukuni; Arie, Ryosuke; Kashiwahara, Katsuto; and Kuwashima, Hidesumi, 4,316,362, Cl. 60-645.000.

Kuwazuru, Yasumitsu: *See*—
Ueda, Hiroshi; Shimazaki, Masao; and Kuwazuru, Yasumitsu, 4,316,834, Cl. 260-38.000.

Kyburz, Emilio: *See*—
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,316,839, Cl. 260-239.30T.

Kyowa Hakko Kogyo Co., Ltd.: *See*—
Hirata, Tadashi; Hashimoto, Yukio; Ogasa, Takehiro; Kobayashi, Shigeru; Matsukuma, Ikuo; and Kimura, Kazuo, 4,316,958, Cl. 435-119.000.

L. Schuler GmbH: *See*—
Veil, Martin, 4,316,372, Cl. 72-4.000.

LaBate, Micheal D. Material for treating coke oven doors and jambs to prevent the build up of tar thereon. 4,316,831, Cl. 260-29.60S.

Lacy, Charles R.: *See*—
Benoun, Samie; and Lacy, Charles R., 4,316,557, Cl. 222-129.100.

Laitram Corporation, The: *See*—
Lapeyre, James M., 4,316,524, Cl. 182-93.000.

Lam, Tat C., to TCL, Inc. Wideband transceiver with EMI suppression. 4,317,205, Cl. 375-7.000.

Lambert, Robert R., to Air Factors West. Jet pair weir gate. 4,316,407, Cl. 98-40.00D.

Lammiman, Steven A.; and Hardman, Michael P. Pumping of aqueous slurries. 4,316,505, Cl. 166-293.000.

Land Combustion Limited: *See*—
Coe, Charles D.; Bell, Donald; and Bray, Michael R., 4,317,045, Cl. 250-554.000.

Landes Manufacturing Company: *See*—
Johnson, Jerry L., 4,316,644, Cl. 312-108.000.
Landry, Archie C., to North American Manufacturing Corp. Firing mechanism for single action firearm. 4,316,341, Cl. 42-70.00F.
Landsman, Douglas A.; and Luczak, Francis J., to United Technologies Corporation. Noble metal-chromium alloy catalysts and electrochemical cell. 4,316,944, Cl. 429-44.000.
Lang, Richard D.: *See*—
Bolton, Theodore S.; and Lang, Richard D., 4,316,408, Cl. 98-41.00R.
Langanke, Rolf, to Stabilus GmbH. Gas spring. 4,317,014, Cl. 200-61.620.
Lange, Frederick F., to Rockwell International Corporation. Al_2O_3/-ZrO_2 ceramic. 4,316,964, Cl. 501-105.000.
Langer, Alois A.: *See*—
Mirowski, Mieczyslaw; Mower, Morton M.; and Langer, Alois A., 4,316,472, Cl. 128-419.00D.
Lapeyre, James M., to Laitram Corporation, The. Two-speed ladder. 4,316,524, Cl. 182-93.000.
Lapham, Sidney D. Nesting or stacking box. 4,316,540, Cl. 206-507.000.
Laquerbe, Michel; and Tatard, Francois. Clay and cement mortars, methods of preparing them. 4,316,826, Cl. 260-15.000.
Largman, Theodore: *See*—
Tunick, Allen A.; Largman, Theodore; and Sifniades, Stylianos, 4,316,877, Cl. 423-10.000.
Larson, Willis A., to Oak Industries, Inc. Membrane switch with universal spacer means. 4,317,013, Cl. 200-5.00A.
Lavine, Jerome M.: *See*—
Masters, Joseph I.; Goldberg, Gershon M.; and Lavine, Jerome M., 4,316,946, Cl. 430-9.000.
Lawhon, Robert A.; and Yigdall, Jeffrey S., to PPG Industries, Inc. Apparatus and method for attenuating glass ribbon. 4,316,733, Cl. 65-99.00A.
Le Materiel Telephonique Thomson-CSF: *See*—
Athenes, Claude; Meresse, Jean L. J.; and Salle, Jacques E., 4,317,008, Cl. 179-18.0FC.
LeBegue, Maurice K.; and Michael, Earl C., to National Mine Service Company. Extensible and retraciable rotor arm cutting assembly. 4,316,635, Cl. 299-80.000.
Leber, Dieter, to VDO Adolf Schindling AG. Flowmeter having a rotary body and means for calibration. 4,316,392, Cl. 73-861.830.
Le Chatelier, Jacques, to Societe Alsacienne de Constructions Mechaniques. Method and device for winding yarn onto bobbins in the form of cones in spinning frames. 4,316,357, Cl. 57-95.000.
Lechner, Uwe: *See*—
Wetzel, Bernd; Waitun, Eberhard; Maier, Roland; Rueter, Wolfgang; Lechner, Uwe; and Goeth, Hans, 4,316,898, Cl. 424-246.000.
Ledouble, Jean-Pierre; and Muller, Klaus, to Ciba-Geigy Corporation. Process for the production of bis-[0-(1-alkylthioethylimino)-N-methylcarbamyl]-N,N-sulfides. 4,316,854, Cl. 260-453.100.
Lee, Harry W., Jr., to Reynolds Metals Company. Apparatus for corrugating can body flanges. 4,316,375, Cl. 72-105.000.
Lee, Harvey R., to Canadian General Electric Company Limited. Nuclear fuel stress corrosion prevention. 4,316,771, Cl. 376-415.000.
Lee, Teh-Hsuang: *See*—
Woo, Nea-Yea; and Lee, Teh-Hsuang, 4,317,134, Cl. 358-213.000.
Lee, Yu C.: *See*—
Wolf, Irving W.; Stafford, Michael K.; Kahan, Hillard M.; Acebo, William F.; Scott, Lawrence M.; and Lee, Yu C., 4,316,738, Cl. 75-0.5BA.
Leff, Martin J.: *See*—
Flaum, Stephen S.; and Leff, Martin J., 4,316,755, Cl. 156-205.000.
Leimgruber, Willy: *See*—
Batcho, Andrew D.; Hengartner, Urs O.; Leimgruber, Willy; Scott, John W.; and Valentine, Donald, Jr., 4,316,847, Cl. 260-326.460.
Leno, Theodore M.: *See*—
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Lenz, Wolfgang; Albenberger, Johann; and Knell, Karl, to Steyr-Daimler-Puch Aktiengesellschaft. Backrest. 4,316,631, Cl. 297-284.000.
Leonhardt, Alexander, to Dravo Corporation. Sieving roller conveyor for green pellets. 4,316,543, Cl. 209-673.000.
Leopold Kostal, Firma: *See*—
Bergmann, Eduard; and Bonczek, Wolfgang, 4,317,104, Cl. 338-330.000.
Le Pennec, Dominique; Commereuc, Dominique; and Chauvin, Yves, to Institut Francais du Petrole. Nickel compounds. 4,316,851, Cl. 260-408.000.
Lepisto, J. George, to Champion International Corporation. Sleeve valve for flexible bags. 4,316,574, Cl. 229-62.500.
Leszczynski, Nicholas G., to NP Industries, Inc. Dual slope compensation apparatus. 4,317,184, Cl. 367-13.000.
L'Etat Francais, Represente par le Secretaire d'Etat aux Postes et Telecommunications et a la Telediffusion (Centre National d'Etudes des Telecommunication): *See*—
Guinet, Yves M., 4,317,132, Cl. 358-142.000.
Leva, Max. Tower packing elements. 4,316,863, Cl. 261-98.000.
Levasseur, Joseph L., to H. R. Electronics Company. Versatile pricing means. 4,316,532, Cl. 194-1.00N.
Levin, Julian; and Franks, Arnold. Article identification method. 4,316,766, Cl. 156-631.000.
Levine, Bernard B. Compositions for testing to predict and/or diagnose allergy to penicillins. 4,316,882, Cl. 424-9.000.
Levine, Philip, to Thomassen U.S., Inc. Solar collector. 4,316,452, Cl. 126-450.000.
Lewis, W. Denison. Swim paddles. 4,316,300, Cl. 9-307.000.
Licentia Patent-Verwaltungs-G.m.b.H.: *See*—
Dahlberg, Reinhard, 4,317,091, Cl. 331-107.00R.
Maurer, Robert; and Schau, Walter, 4,317,231, Cl. 455-330.000.
Liegeois, Jean Marie C. G., to Hexcel Corporation. Process for producing orthopedic structures and a thermoplastic linear polyurethane for use in such process. 4,316,457, Cl. 128-156.000.
Lien, Larry A.: *See*—
Petrellis, Pano C.; Lien, Larry A.; and Zarr, Wesley E., 4,316,949, Cl. 430-159.000.
Lies, Kenneth A., to Texas Instruments Incorporated. Clocked logic low power standby mode. 4,317,186, Cl. 364-707.000.
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Teza, Jeffrey R.; and Lies, Kenneth A., 4,317,181, Cl. 364-707.000.
Life Savers, Inc.: *See*—
Friello, Dominick R.; Parker, Ellery; Mackay, Donald A. M.; and Cherukuri, Subraman R., 4,316,915, Cl. 426-5.000.
Lin, David C. K.; and Huey, Larry J., to Owens-Corning Fiberglas Corporation. Method and apparatus for producing fibers. 4,316,731, Cl. 65-5.000.
Lin, Leroy C., to Goodyear Tire & Rubber Company, The. Apparatus for producing large diameter spun filaments. 4,316,716, Cl. 425-72.00S.
Lind, Leif I. Flow-distributing device and an air-intake screen provided with such a device. 4,316,406, Cl. 98-40.00R.
Linden-Alimak AB: *See*—
Lundmark, Signar; and Hallgren, Leif, 4,316,679, Cl. 405-303.000.
Lindqvist, Rolf E., to Aktiebolaget Overums Bruk. Reversible plow. 4,316,507, Cl. 172-225.000.
Lindskog, Kjell. Load carrying device. 4,316,687, Cl. 410-92.000.
Lindstrom, Olle B.; and Lindstrom, Rikard O. Methods for mechanically dewatering peat. 4,316,331, Cl. 34-17.000.
Lindstrom, Rikard O.: *See*—
Lindstrom, Olle B.; and Lindstrom, Rikard O., 4,316,331, Cl. 34-17.000.
Ling, Nicholas C.: *See*—
Guillemin, Roger C. L.; Ling, Nicholas C.; Esch, Fred S.; Bohlen, Peter; and Brazeau, Paul E., Jr., 4,316,891, Cl. 424-177.000.
Link, Helmut F.; and Waiblinger, Paul, to Index-Werke KG Hahn & Tessky. Loading and/or unloading device for machine tools, particularly automatic lathes. 4,316,398, Cl. 82-2.700.
Lissack, Selwyn L. By-directional brushless motor scanner. 4,316,648, Cl. 350-6.600.
Litton Systems, Inc.: *See*—
Grant, David C., Jr.; and Hutchings, Thomas J., 4,317,089, Cl. 372-94.000.
Liu, Benjamin Y. H.; Kittelson, David B.; Dolan, Daniel F.; and Pui, David Y. H., to University of Minn., The Regents of the. Apparatus for recycling collected exhaust particles. 4,316,360, Cl. 60-275.000.
Lizzy Emergency Systems, Inc.: *See*—
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Lloyd, William R. J., to Pacific Paper Products, Inc. Aerial marker launcher. 4,316,554, Cl. 221-232.000.
Lockheed Corporation: *See*—
Allen, William P., Jr.; and Zieg, Benjamin S., 4,317,121, Cl. 343-712.000.
Loewenthal, Horst, to SIG-Schweizerische Industrie-Gesellschaft. Apparatus for grouping and inserting objects into containers. 4,316,354, Cl. 53-538.000.
Lotz, Wolfgang, to Hoffmann-La Roche Inc. Method of lowering serum prolactin. 4,316,897, Cl. 424-244.000.
Loutaty, Roben: *See*—
Atlani, Martial; Loutaty, Roben; Wakselman, Claude; and Yacono, Charles, 4,316,796, Cl. 208-313.000.
Lowell, Rudolph L.: *See*—
Kucera, Joseph B., 4,316,691, Cl. 414-24.500.
Lubin, Vincent M. Wash basin attached shelf. 4,316,296, Cl. 4-630.000.
Lucas, Peter A.: *See*—
Perine, Donald R.; and Lucas, Peter A., 4,316,922, Cl. 428-35.000.
Luczak, Francis J.: *See*—
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Luddington, Eric A.: *See*—
Hinchcliffe, Dennis; Heybourn, Frank; and Luddington, Eric A., 4,316,754, Cl. 198-347.000.
Luedtke, Arthur: *See*—
Bentley, W. Ferrel; Luedtke, Arthur; and Scott, James E., 4,317,120, Cl. 343-120.000.
Lukac, Rudolf G.: *See*—
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Lummus Company, The: *See*—
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Sze, Morgan C., 4,316,793, Cl. 208-10.000.
Lundberg, Duane R., to AMF Incorporated. Leg and hip sled exerciser. 4,316,608, Cl. 272-117.000.
Lundberg, Robert D.: *See*—
Makowski, Henry S.; Lundberg, Robert D.; and Bock, Jan, 4,316,828, Cl. 260-23.50A.
Lundmark, Signar; an' Hallgren, Leif, to Linden-Alimak AB. Ground stabilization equipment. 4,316,679, Cl. 405-303.000.
Lungo, Antonio. Electric filter and method of manufacture. 4,317,093, Cl. 333-187.000.

Luossavaara - Kiirunavaara Aktiebolag: *See*—
Drugge, Roland, 4,316,718, Cl. 432-58.000.
Lutz, Charles W.: *See*—
Pinsky, Michael L.; Finley, Joseph H.; and Lutz, Charles W., 4,316,879, Cl. 423-265.000.
Lutzen, Niels W., to Novo Industri A/S. Fermentation process. 4,316,956, Cl. 435-96.000.
Lyakhov, Vyacheslav P.: *See*—
Zelenov, Petr I.; Usachev, Petr A.; Davydov, Jury V.; Lyakhov, Vyacheslav P.; Zelenova, Irina M.; Aleinikov, Nikolai A.; Sladkovich, Vladlen F.; and Titov, Viktor I., 4,316,542, Cl. 209-39.000.
M&T Chemicals Inc.: *See*—
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Macho, Franz, to VEGA Vertrieb und Fertigung Elektronischer Gerate und Apparate Grieshaber KG. Arrangement for the generation of a signal in proportion to a capacity. 4,317,116, Cl. 340-870.390.
Mackay, Donald A. M.: *See*—
Friello, Dominick R.; Parker, Ellery; Mackay, Donald A. M.; and Cherukuri, Subraman R., 4,316,915, Cl. 426-5.000.
Mac Lean, John P.; Cantwell, J. Edward; Brown, John D.; and Hoy, Harold D., to Texaco Inc. Highly efficient cyclone separator. 4,316,729, Cl. 55-459.00R.
Maejima, Hideo; and Ohnuma, Kunihiko, to Hitachi, Ltd. LSI Microprocessor having an error processing circuit. 4,317,171, Cl. 364-200.000.
Maggio, Robert L., to Vapor Corporation. Balanced relief valve with novel seal. 4,316,598, Cl. 251-63.000.
Magna Corporation: *See*—
Blair, Charles M., Jr., 4,316,808, Cl. 252-8.55D.
Magnetic Peripherals Inc.: *See*—
Wickham, Thomas J., 4,316,321, Cl. 29-845.000.
Maier, Leonhard; and Pip, Wolfgang, to Rohm GmbH. Method for making laminates comprising a hard foam layer and a fiber-reinforced synthetic resin layer. 4,316,934, Cl. 428-308.400.
Maier, Roland: *See*—
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Mailen, James C.: *See*—
Tallent, Othar K.; Mailen, James C.; Bell, Jimmy T.; and Arwood, Phillip C., 4,316,776, Cl. 204-1.500.
Makarenko, Alexandr V.: *See*—
Ragoza, Igor V.; Dalidovich, Alexandr S.; Begunov, Petr M.; Vasiljuk, Petr J.; Tonikian, Robert T.; Tonikian, Dina N.; and Makarenko, Alexandr V., 4,316,369, Cl. 66-81.000.
Makita, Naoki, to Tokico Ltd. Vehicle height adjusting device. 4,316,604, Cl. 267-64.190.
Makowski, Henry S.; Lundberg, Robert D.; and Bock, Jan, to Exxon Research & Engineering Co. Bulk neutralization. 4,316,828, Cl. 260-23.50A.
Mallon, Charles B., to Union Carbide Corporation. Surfactant free process for production of pressure sensitive adhesive latexes. 4,316,830, Cl. 260-29.6MQ.
Manini, Benito; Furia, Edoardo; Stefani, Eugenio; Baldi, Giuliano, Barracchia, Pasquale; Cacciapuoti, Beniamino; and Mattei, Bruno, to Moplefan S.p.A. High speed circular loom for the production of tubular fabrics starting from threads, straps and the like made of synthetic and natural substances. 4,316,488, Cl. 139-13.00R.
Manitowoc Company, Inc., The: *See*—
Helm, Percy R.; and Morrow, James G., Sr., 4,316,548, Cl. 212-196.000.
Manizza, Guelfo A., to Federal Paper Board Company, Inc. Bottle package with promotional card insert. 4,316,538, Cl. 206-216.000.
Manning, John D., to Carrier Corporation. Method and apparatus for integrating components of a refrigeration system. 4,316,366, Cl. 62-200.000.
Mannor, James E.: *See*—
Mason, Neil E.; Dunn, Michael A.; and Mannor, James E., 4,316,338, Cl. 42-1.00G.
Marais, Henri J.; and Morrison, Kevin M. Intravenous vascular stabilizer. 4,316,461, Cl. 128-214.00R.
Marans, Nelson S.: *See*—
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Marcham, Douglas H.; and Reichter, Kenneth A., to Varta Limited. Button cell electrode and method of manufacture. 4,316,945, Cl. 429-222.000.
Markwell, Roger E., to Beecham Group Limited. Chromanone derivatives, a process for their preparation and compositions containing them. 4,316,899, Cl. 424-250.000.
Markwitz, Wernhard, to Siemens Aktiengesellschaft. Circuit arrangement for correction of data. 4,317,202, Cl. 371-43.000.
Marky, Michael, to Ciba-Geigy Corporation. Phosphonium compounds, a process for their preparation and a process for the preparation of asymmetrically substituted stilbene fluorescent brightening agents. 4,316,860, Cl. 260-513.700.
Marschner, Friedemann: *See*—
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Marshall and Williams Company: *See*—
Richter, Hans H., 4,316,309, Cl. 26-93.000.
Martin, Albert E., to Dresser Industries, Inc. Welded side frame column wear plate. 4,316,417, Cl. 105-197.0DB.
Martin, Albert R., to R. Martin & Associates. Process and apparatus involving a cutting wire spooling system for cutting brick and tile. 4,316,866, Cl. 264-157.000.
Martin, Andre. Simulcast transmission system. 4,317,220, Cl. 455-58.000.
Martin, C. Edward. Label applicator. 4,316,762, Cl. 156-488.000.
Martin, Melvin S. Wide-mouth article unloading. 4,316,694, Cl. 414-120.000.
Marvin Glass & Associates: *See*—
Rivette, Denni F.; Morrison, Howard J.; and Montague, Douglas P., 4,316,345, Cl. 46-1.0JR.
Masaki, Susumu: *See*—
Mineshima, Hideo; Sato, Nobuo; and Masaki, Susumu, 4,316,966, Cl. 525-53.000.
Mashimo, Yukio: *See*—
Tokuda, Ryuji; Mashimo, Yukio; and Uchidoi, Masanori, 4,317,070, Cl. 315-241.00P.
Mascero, Roberto, to Ing. C. Olivetti & C., S.p.A. Digital device for synchronizing and decoding coded signals. 4,317,111, Cl. 340-347.0DD.
Mason, Neil E.; Dunn, Michael A.; and Mannor, James E. Handheld firearm adapted for dispensing debilitating chemical repellants. 4,316,338, Cl. 42-1.00G.
Massachusetts Institute of Technology: *See*—
Schweppe, Fred C., 4,317,049, Cl. 307-39.000.
Senturia, Stephen D.; and Togashi, Kou, 4,317,084, Cl. 331-57.000.
Sterling, Thomas L.; and Kirtley, James L., Jr., 4,317,175, Cl. 364-464.000.
Masters, Joseph I.; Goldberg, Gershon M.; and Lavine, Jerome M., to Ionomet Company, Inc. Surface sensitized chalcogenide product and process for making and using the same. 4,316,946, Cl. 430-9.000.
Masuda, Isao: *See*—
Odaka, Kazumi; and Masuda, Isao, 4,317,109, Cl. 340-146.3AC.
Masui, Takeshi; Masui, Yoshiro; Hiramatu, Teruo; and Yamada, Tomisabro, to Sumitomo Metal Industries, Ltd. Method for preventing wandering of strip under roller leveling in hot rolling line. 4,316,376, Cl. 72-161.000.
Masui, Yoshiro: *See*—
Masui, Takeshi; Masui, Yoshiro; Hiramatu, Teruo; and Yamada, Tomisabro, 4,316,376, Cl. 72-161.000.
Matsuhisa, Tadaaki: *See*—
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Matsui, Yoshiya: *See*—
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Matsukuma, Ikuo: *See*—
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Matsushita Electric Industrial Co., Ltd.: *See*—
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Maurer, Fritz: *See*—
Fuchs, Rainer; Maurer, Fritz; Priesnitz, Uwe; and Riebel, Hans-Jochem, 4,316,994, Cl. 568-639.000.
Maurer, Robert; and Schau, Walter, to Licentia Patent-Verwaltungs-G.m.b.H. Microwave circuit for a parametric upper sideband down converter. 4,317,231, Cl. 455-330.000.
Max Planck-Gesellschaft: *See*—
Eibl, Hansjorg, 4,316,730, Cl. 55-524.000.
Mayborg, Charles C.; and Teel, Delbert L., II, to International Business Machines Corporation. Keylever pawl tube spring and keyboard utilizing a keylever pawl tube spring. 4,316,674, Cl. 400-478.000.
Maycock, Alan L.: *See*—
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Mayer, Walter P.: *See*—
Barth, Bruce P.; Johnson, Robert N.; Mayer, Walter P.; and Pinkston, Bruce H. W., 4,316,875, Cl. 422-133.000.
Mayo, George L., to Pyle, Stoddard H.; and Roberts, Wayne R. Wood member cutting apparatus. 4,316,400, Cl. 83-425.200.
Mazurk, Louis R., to Chicago Decal Company. Membrane touch switch. 4,317,011, Cl. 200-5.00A.
McAlister, Roy E. Heat exchanger. 4,316,436, Cl. 122-451.00S.
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DeGeeter, Melvin J.; and McCall, John M., 4,316,901, Cl. 424-251.000.
McCutchen, William C.: *See*—
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McDaniel, Carl V.; and Marans, Nelson S., to W. R. Grace & Co. Viscosifying agent. 4,316,807, Cl. 252-8.50A.
McDonnell Douglas Corporation: *See*—
Jerome, Jonathan A., 4,317,131, Cl. 358-128.500.
McGinnis, George P. Inlet manifold preheating device. 4,316,442, Cl. 123-546.000.

McGroarty, Bryan M. Waterproofing material containing bentonite. 4,316,833, Cl. 260-33.6PQ.

McHenry Systems, Inc.: *See*—
Buckley, Jim, 4,316,650, Cl. 350-67.000.

McIntire, John M.; Hawkins, James M.: and Vachon, Raymond N., to Eastman Kodak Company. Hot melt sizing compositions comprising an acrylic acid-alkyl (meth)acrylate terpolymer. 4,316,929, Cl. 428-262.000.

McKenna, Quentin M. Wind propelled craft. 4,316,424, Cl. 114-39.000.

McKirdy, Ian D. Temperature control system. 4,316,363, Cl. 62-89.000.

McLemore, Jerry R., to Phillips Petroleum Company. Rotary solids feeder. 4,316,559, Cl. 222-225.000.

Meacham Marine Products, Inc.: *See*—
Kafka, Charles F.; and Kafka, Robert S., 4,316,626, Cl. 292-285.000.

Medendorp, Roger L. Press and actuator therefor. 4,316,712, Cl. 425-292.000.

Medi-Dose, Inc.: *See*—
Braverman, Milton; and Zink, Leonard, 4,316,541, Cl. 206-532.000.

Medin, Stanislav A.: *See*—
Bazarov, Georgy P.; Kovbasjuk, Valentin I.; Kufa, Emma N.; and Medin, Stanislav A., 4,317,057, Cl. 310-11.000.

Medlin, Richard C. Lightweight armored vehicle and method of making same. 4,316,404, Cl. 89-36.00H.

Meek, Ronald L.: *See*—
Cohen, Richard L.; and Meek, Ronald L., 4,317,035, Cl. 250-272.000.

Meeusen, Pieter. Structure for the mooring of yachts and similar craft. 4,316,426, Cl. 114-263.000.

Meier, Willi, to Dorina Nahmaschinen GmbH. Combined sewing machine housing and clamping jig. 4,316,422, Cl. 112-258.000.

Meiji Seika Kaisha, Ltd.: *See*—
Omoto, Shoji; Itoh, Jiro; Niwa, Tomizo; Shomura, Takashi; Niizato, Tetsutaro; and Inouye, Shigeharu, 4,316,894, Cl. 424-116.000.

Meinan Machinery Works, Inc.: *See*—
Suzuki, Shunichi; Koba, Yoshinori; Yamada, Yoshiaki; Aoto, Teruaki; Kuno, Yoriyoshi; and Yokota, Masanobu, 4,316,758, Cl. 156-351.000.

Melicque, Gaston E. E., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, "S.N.E.C.M.A.". Device for fastening stud bolts. 4,316,675, Cl. 403-22.000.

Mendelsohn, Charles, to United Technologies Corporation. Pressure compensating device for a plasma display panel. 4,317,061, Cl. 313-174.000.

Mepalservice B.V.: *See*—
de Winter, Koen M. M., 4,316,550, Cl. 215-360.000.

Mercer, Alec V.; and Paver, Roger, to Sandoz Ltd. Bis-triazolyl and bis-pyrazolyl stilbene compounds. 4,316,815, Cl. 252-301.220.

Merck & Co., Inc.: *See*—
Grier, Nathaniel; Dybas, Richard A.; and Witzel, Bruce E., 4,316,903, Cl. 424-267.000.
Thorsett, Eugene D.; Patchett, Arthur A.; Harris, Elbert E.; and Maycock, Alan L., 4,316,896, Cl. 424-200.000.

Meresse, Jean L. J.: *See*—
Athenes, Claude; Meresse, Jean L. J.; and Salle, Jacques E., 4,317,008, Cl. 179-18.0FC.

Merges, Heinz: *See*—
Merges, Marco, 4,316,476, Cl. 132-40.000.

Merges, Marco, to Merges, Heinz. Flat curler to curl or undulate hair. 4,316,476, Cl. 132-40.000.

Messina, Benedicto U.; and Silkman, William D., to International Business Machines Corporation. Cache organization enabling concurrent line castout and line fetch transfers with main storage. 4,317,168, Cl. 364-200.000.

Metallgesellschaft, Aktiengesellschaft: *See*—
Jockel, Heinz; Marschner, Friedemann; Moller, Friedrich W.; and Mortel, Hans-Gunter, 4,316,880, Cl. 423-415.00A.

Mettler Instrumente AG: *See*—
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Jonath, Eberhard, 4,316,518, Cl. 177-25.000.
Kupper, Walter, 4,316,516, Cl. 177-25.000.

Meyer, Jerome K. Ice cream making and packaging system and method. 4,316,490, Cl. 141-9.000.

Michael, Earl C.: *See*—
LeBegue, Maurice K.; and Michael, Earl C., 4,316,635, Cl. 299-80.000.

Michel, Karl H.; and Hoehn, Marvin M., to Eli Lilly and Company. Process for production of antibiotic from streptomyces. 4,316,959, Cl. 435-122.000.

Mickal, Vladimir: *See*—
Winkler, Jiri; Cibulka, Josef; Bryksi, Jan; Jelinek, Richard; Krtek, Jan; Mickal, Vladimir; Hlousek, Jaroslav; and Kondr, Milan, 4,317,166, Cl. 363-138.000.

Micro-Precision, Inc.: *See*—
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Micropolis Corporation: *See*—
Gervais, William J., 4,317,146, Cl. 360-98.000.

Middleman, Lee M.; and Evans, Joseph H., to Raychem Corporation. Circuit protection devices. 4,317,027, Cl. 219-553.000.

Middleton, Michael R.: *See*—
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Midland-Ross Corporation: *See*—
Thome, William L., 4,316,717, Cl. 432-8.000.

Midorikawa, Koyo: *See*—
Mochizuki, Noritaka; Minami, Setsuo; Matsui, Yoshiya; Midorikawa, Koyo; Tsunoda, Atsuo; Murase, Hidetoshi; Suzuta, Mikio; and Moriwaki, Masazumi, 4,316,665, Cl. 355-1.000.

Midrex Corporation: *See*—
Beggs, Donald; and Scarlett, John C., 4,316,739, Cl. 75-40.000.

Miller, Martin P.: *See*—
Burnworth, Donald O., 4,317,177, Cl. 364-483.000.

Miller, Robert C.; and Ryan, Frederick M., to Westinghouse Electric Corp. Temperature detection using the refractive indices of light guides. 4,316,388, Cl. 73-356.000.

Miller, William G., to Xerox Corporation. Image reduction servo system. 4,316,668, Cl. 355-55.000.

Milliken Research Corporation: *See*—
Otto, Wolfgang K. F., 4,316,928, Cl. 428-229.000.

Mills, King L.; and Johnson, Paul H., to Phillips Petroleum Company. Apparatus for producing carbon black. 4,316,876, Cl. 422-151.000.

Minami, Setsuo: *See*—
Mochizuki, Noritaka; Minami, Setsuo; Matsui, Yoshiya; Midorikawa, Koyo; Tsunoda, Atsuo; Murase, Hidetoshi; Suzuta, Mikio; and Moriwaki, Masazumi, 4,316,665, Cl. 355-1.000.

Minatome Corp.: *See*—
Stana, Regis R.; and Tiepel, Erich W., 4,316,800, Cl. 210-651.000.

Minemura, Norihiro; Toyao, Manabu; Kobayashi, Tsukasa; and Tashiro, Mikio, to Teijin Limited. Synthetic fur and process for preparation thereof. 4,316,924, Cl. 428-89.000.

Mineo, Kinji, to Yamato Iron Works Co., Ltd. Method of mounting mouthpiece device of drums and like containers. 4,316,318, Cl. 29-512.000.

Miner, Kevin S.; and Trachtenberg, Abraham. Combination connecting plate. 4,316,593, Cl. 248-250.000.

Mineshima, Hideo; Sato, Nobuo; and Masaki, Susumu, to Mitsui Petrochemical Industries Ltd. Process for producing chemically blended propylene resin composition. 4,316,966, Cl. 525-53.000.

Minnesota Mining and Manufacturing Company: *See*—
Brown, Harvey A., 4,316,984, Cl. 546-165.000.
Petrellis, Pano C.; Lien, Larry A.; and Zarr, Wesley E., 4,316,949, Cl. 430-159.000.
Wendling, Larry A., 4,316,952, Cl. 430-285.000.

Mirowski, Mieczyslaw; Mower, Morton M.; and Langer, Alois A., to Mirowski, Mieczyslaw. Cardioverting device with stored energy selecting means and discharge initiating means, and related method. 4,316,472, Cl. 128-419.00D.

Mita Industrial Company Limited: *See*—
Motomura, Minoru; Shibata, Kiyoshi; and Watanabe, Toshio, 4,316,719, Cl. 432-60.000.

Mitsubishi Adetate Co.: *See*—
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Mitsubishi Denki Kabushiki Kaisha: *See*—
Itoh, Teturoh, 4,317,019, Cl. 219-69.00M.
Nagai, Akio; Nagai, Haruhiko; and Hishii, Masao, 4,317,090, Cl. 372-58.000.

Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
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Miyashita, Teruo: *See*—
Yoshida, Kohichi; Miyashita, Teruo; and Sano, Hiroshi, 4,316,780, Cl. 204-35.00N.

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Mocco, Henri A. Process for winding, on a take-up shaft, a sheet material fed from a supply source. 4,316,586, Cl. 242-65.000.

Mochizuki, Noritaka; Minami, Setsuo; Matsui, Yoshiya; Midorikawa, Koyo; Tsunoda, Atsuo; Murase, Hidetoshi; Suzuta, Mikio; and Moriwaki, Masazumi, to Canon Kabushiki Kaisha. Projection device. 4,316,665, Cl. 355-1.000.

Mohler, Hanns: *See*—
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,316,839, Cl. 260-239.30T.

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Moller, Friedrich W.: *See*—
Jockel, Heinz; Marschner, Friedemann; Moller, Friedrich W.; and Mortel, Hans-Gunter, 4,316,880, Cl. 423-415.00A.

Molt, Kenneth R.; and Zestermann, Mary J., to Carstab Corporation. Polyalkylated 4-aminopiperidine derivatives as stabilizers for synthetic polymers. 4,316,837, Cl. 260-45.80N.

Monforte, Frank R.; and Argentina, Giltan M., to Ampex Corporation. Precision dielectric filled ferrite toroid for use in microwave devices. 4,316,923, Cl. 428-68.000.

Monsanto Company: *See*—
Esposito, Robert A.; Valego, Frederick F., Jr.; and Hoagland, John C., 4,316,868, Cl. 264-171.000.
Walsh, Robert J., 4,316,757, Cl. 156-286.000.
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Montedison S.P.A.: *See*—
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Montesi, Edward N., to Norton Company. Ear muff accessory for safety hard hat. 4,316,290, Cl. 2-423.000.
Mooi, John, to Atlantic Richfield Company. Hydrocarbon conversion process with reduced sulfur oxide emissions. 4,316,795, Cl. 208-120.000.
Moorman, Stephen L.: *See*—
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Morris, Don L., to Eastman Kodak Company. Preparation of $\alpha\beta$-aldehydes by aldol condensation. 4,316,990, Cl. 568-461.000.
Morrison, Howard J.: *See*—
Rivette, Denni F.; Morrison, Howard J.; and Montague, Douglas P., 4,316,345, Cl. 46-1.00R.
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Moss, Ernest K., to Celotex Corporation, The. Polyisocyanurate foam and laminates thereof and process for producing them. 4,316,935, Cl. 428-304.400.
Moss, Paul B. Adjustable air-carbon arc torch. 4,317,024, Cl. 219-144.000.
Mosser, Benjamin H., III, to AMP Incorporated. Load coil. 4,317,006, Cl. 178-46.000.
Mostek Corporation: *See*—
Caruso, Michael J.; Hildebrand, David B.; and Ohri, Kul B., 4,317,054, Cl. 307-297.000.
Motomura, Minoru; Shibata, Kiyoshi; and Watanabe, Toshio, to Mita Industrial Company Limited. Fixing and heating device for electrostatic copying apparatus. 4,316,719, Cl. 432-60.000.
Motonami, Masanao: *See*—
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Brown, Daniel P., 4,317,130, Cl. 358-108.000.
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Davidson, Allen L.; and Cohn, Jona, 4,317,217, Cl. 455-24.000.
Gragg, John E., Jr., 4,317,126, Cl. 357-26.000.
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Andersen, Dennis H., 4,316,379, Cl. 72-351.000.
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Mueller, Dale A.; Ruminsky, Robert T.; Serber, Stephen L.; and Wolfgram, Rodger C., to Honeywell Inc. Defrost control system for refrigeration system. 4,316,365, Cl. 62-151.000.
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Nagai, Akio; Nagai, Haruhiko; and Hishii, Masao, to Mitsubishi Denki Kabushiki Kaisha. Laser oscillator. 4,317,090, Cl. 372-58.000.
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Nagamatsu, Brian H.; and Rolsma, Barney, to General Electric Company. Boiler tube silencer. 4,316,435, Cl. 122-235.00F.
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Nagatsuma, Nobuyoshi, to Honda Giken Kogyo Kabushiki Kaisha. Method of manufacturing seamless wheel rims. 4,316,374, Cl. 72-91.000.
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Nara, Takashi; Okachi, Ryo; Kawamoto, Isao; Sato, Tomoyasu; and Oka, Tetsuo, to Abbott Laboratories. Process for the production of 7-deazaadenosine and 7-deazainosine. 4,316,957, Cl. 435-119.000.
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National Mine Service Company: *See*—
LeBegue, Maurice K.; and Michael, Earl C., 4,316,635, Cl. 299-80.000.
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Gross, William H., 4,317,082, Cl. 330-288.000.
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Reece, John W., 4,317,004, Cl. 178-15.000.
Neher, Karl, to Siemens-Albis AG. Oil-cooled radar transmitter apparatus. 4,317,224, Cl. 455-128.000.
Nelson, Eric L., to Nelson Research & Development Co. Method and composition of reducing pain. 4,316,888, Cl. 424-127.000.
Nelson, Harold E. Portable abrasive belt finishing machine. 4,316,349, Cl. 51-135.00R.
Nelson, John F., to Illinois Tool Works Inc. Accumulator filter and conduit clamp assembly. 4,316,622, Cl. 285-119.000.
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Rajadhyaksha, Vithal J., 4,316,893, Cl. 424-180.000.
Nelson, Richard L., to Exxon Research & Engineering Co. Facsimile apparatus and method of operation. 4,317,139, Cl. 358-300.000.
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Nibby, Chester M., Jr.: *See*—
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Nippon Steel Corporation: *See*—
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Nishi, Isao; and Nakasa, Hiroyasu, to Nihon Etl Kabushiki Kaisha. Device for determining the position of a sound source. 4,317,186, Cl. 367-127.000.
Nishigaki, Yuji; Kasai, Masanao; and Okano, Kazumi, to Canon Kabushiki Kaisha. Photoconductive CdS powder material for electrophotography. 4,316,948, Cl. 430-94.000.
Nishimoto, Kanichi, to Noritsu Koki Co., Ltd. Conveyance system incorporated in photographic treatment apparatus for long length photosensitive material. 4,316,664, Cl. 354-321.000.
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Nishizawa, Jun-ichi, to Zaidan Hojin Handotai Kenkyu Shinkokai. Static induction transistor and integrated circuit utilizing same. 4,317,127, Cl. 357-42.000.
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Nittetu Chemical Engineering Ltd.: *See*—
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Niwa, Tomizo: *See*—
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Nogawa, Kenji; Takemura, Katsuyoshi; and Okada, Yoshifumi, to Matsushita Electric Industrial Co., Ltd. Method of manufacturing electronic circuit apparatus. 4,316,320, Cl. 29-839.000.
Nordstrom, Arnold B.: *See*—
Buttner, Horace J.; and Nordstrom, Arnold B., 4,317,015, Cl. 200-153.00J.
Nordstrom, Manfred A. Method for making a hybrid waterbed mattress. 4,316,423, Cl. 112-262.100.
Noritsu Koki Co., Ltd.: *See*—
Nishimoto, Kanichi, 4,316,664, Cl. 354-321.000.
Norman, Robert D.: *See*—
Shipko, Frederick J.; and Norman, Robert D., 4,316,471, Cl. 128-419.00P.
North American Manufacturing Corp.: *See*—
Landry, Archie C., 4,316,341, Cl. 42-70.00F.
North American Philips Consumer Electronics Corp.: *See*—
Speigel, Kenneth, 4,316,313, Cl. 29-25.180.
Northern Telecom, Inc.: *See*—
Morris, Darryl C., 4,317,052, Cl. 307-261.000.
Northrup, Karl A.: *See*—
Hammond, Thomas J.; and Northrup, Karl A., 4,317,066, Cl. 313-493.000.
Norton Company: *See*—
Montesi, Edward N., 4,316,290, Cl. 2-423.000.
Nossen, Edward J., to RCA Corporation. On line quality monitoring. 4,317,206, Cl. 375-10.000.
Novell, Bruce J.: *See*—
Bowden, Donald R.; and Novell, Bruce J., 4,316,501, Cl. 165-70.000.
Novo Industri A/S: *See*—
Lutzen, Niels W., 4,316,956, Cl. 435-96.000.
NP Industries, Inc.: *See*—
Leszczynski, Nicholas G., 4,317,184, Cl. 367-13.000.
Nuclear Power Company Limited: *See*—
Farmer, Rodney C.; Goldsmith, Hugh A.; and Proudlove, Michael J., 4,316,628, Cl. 294-64.00R.
Nudenberg, Walter: *See*—
Rim, Yong S.; Davison, John A.; and Nudenberg, Walter, 4,316,971, Cl. 525-310.000.
O. Hommel Company, The: *See*—
Hommel, Richard O.; and Klimas, David, 4,316,963, Cl. 501-14.000.
Oak Industries, Inc.: *See*—
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O'Brien, Paul R.: *See*—
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Occidental Research Corporation: *See*—
Caesar, Michael B., 4,316,728, Cl. 55-226.000.
Ochi, Shikayuki: *See*—
Yoshida, Isao; Nagata, Minoru; Ochi, Shikayuki; and Katto, Hisao, 4,317,055, Cl. 307-304.000.
Ochiai, Kazuo: *See*—
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Oda Gosen Kogyo Kabushiki Kaisha: *See*—
Takai, Isao, 4,316,358, Cl. 57-286.000.
Oda, Isao; and Matsuhisa, Tadaaki, to NGK Insulators Ltd. Low expansion ceramics and method of producing the same. 4,316,965, Cl. 501-112.000.
Odaka, Kazumi; and Masuda, Isao, to Nippon Telegraph & Telephone Public Corp. Pattern recognition system for hand-written characters operating on an on-line real-time basis. 4,317,109, Cl. 340-146.3AC.
O'Doherty, George O. P.: *See*—
Clinton, Albert J., deceased; and O'Doherty, George O. P., 4,316,988, Cl. 564-433.000.
Oellerer, Friedrich: *See*—
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Office Nationale d'Etudes et de Recherches Aerospatiales: *See*—
Taillet, Joseph, 4,316,791, Cl. 204-298.000.
Offshore Company, The: *See*—
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Ogasa, Takehiro: *See*—
Hirata, Tadashi; Hashimoto, Yukio; Ogasa, Takehiro; Kobayashi, Shigeru; Matsukuma, Ikuo; and Kimura, Kazuo, 4,316,958, Cl. 435-119.000.

Ogawa, Hisashi: *See*—
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Ohio State University Research Foundation: *See*—
Weed, Herman R.; and Engira, Ram M., 4,317,078, Cl. 324-208.000.
Ohmura, Kaoru; Shibasaki, Ichiro; and Kimura, Takeo, to Asahi Kasei Kogyo Kabushiki Kaisha. Polymers for use in heat resistant photoresist composition and process for preparing the same. 4,316,974, Cl. 525-422.000.
Ohnuma, Kunihiko: *See*—
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Ohri, Kul B.: *See*—
Caruso, Michael J.; Hildebrand, David B.; and Ohri, Kul B., 4,317,054, Cl. 307-297.000.
Ohtsubo, Yoshiakai; and Watanabe, Sakuji, to Nippon Kogaku K.K. Alarm device in an automatic exposure camera. 4,316,660, Cl. 354-50.000.
Oka, Tetsuo: *See*—
Nara, Takashi; Okachi, Ryo; Kawamoto, Isao; Sato, Tomoyasu; and Oka, Tetsuo, 4,316,957, Cl. 435-119.000.
Okachi, Ryo: *See*—
Nara, Takashi; Okachi, Ryo; Kawamoto, Isao; Sato, Tomoyasu; and Oka, Tetsuo, 4,316,957, Cl. 435-119.000.
Okada, Yoshifumi: *See*—
Nogawa, Kenji; Takemura, Katsuyoshi; and Okada, Yoshifumi, 4,316,320, Cl. 29-839.000.
Okano, Kazumi: *See*—
Nishigaki, Yuji; Kasai, Masanao; and Okano, Kazumi, 4,316,948, Cl. 430-94.000.
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Osanai, Akira, 4,317,145, Cl. 360-96.600.
Satoh, Ken; Saitou, Sinichi; Kato, Toshikazu; Watanabe, Seizo; Nishiyama, Toyoo; Shimoda, Misao; Shibata, Tutomu; and Kimura, Kenji, 4,316,590, Cl. 242-199.000.
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Omoto, Shoji; Itoh, Jiro; Niwa, Tomizo; Shomura, Takashi; Niizato, Tetsutaro; and Inouye, Shigeharu, to Meiji Seika Kaisha, Ltd. Antibiotic SF-1130-x3 3 substance and production and use thereof. 4,316,894, Cl. 424-116.000.
Omron Tateisi Electronics Co.: *See*—
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Ondetti, Miguel A.; and Krapcho, John, to E. R. Squibb & Sons, Inc. Mercaptoacyl derivatives of substituted prolines. 4,316,906, Cl. 424-274.000.
Onishi, Soichi; and Kitano, Shigeru, to Sharp Kabushiki Kaisha. Data processor for recording and reading out check data and true data in a cassette tape. 4,317,141, Cl. 360-60.000.
Onoda Cement Company, Ltd.: *See*—
Kawano, Toshio; and Ishii, Shiro, 4,316,583, Cl. 241-1.000.
Ootsuka, Yoshinori: *See*—
Yamaguchi, Hiroaki; Hattori, Tadashi; and Ootsuka, Yoshinori, 4,316,440, Cl. 123-428.000.
Osanai, Akira, to Olympus Optical Co., Ltd. Tape recorder. 4,317,143, Cl. 360-74.100.
Osanai, Akira, to Olympus Optical Co., Ltd. Cassette tape recorder with an engagement mechanism for locking a movable chassis. 4,317,145, Cl. 360-96.600.
Osawa Precision Industries, Ltd.: *See*—
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Osborne, Donald L.; and Shriver, Joe E., to Sperry Corporation. Quick-adjusting jackstand apparatus. 4,316,601, Cl. 254-86.00R.
Osonoi, Kenjiro: *See*—
Ishibashi, Takao; and Osonoi, Kenjiro, 4,316,656, Cl. 352-172.000.
Otto, Wolfgang K. F., to Milliken Research Corporation. Mechanically surface finished textile material. 4,316,928, Cl. 428-229.000.
Owens-Corning Fiberglas Corporation: *See*—
Lin, David C. K.; and Huey, Larry J., 4,316,731, Cl. 65-5.000.
Propster, Mark A.; and Hohman, Charles M., 4,316,732, Cl. 65-27.000.
Roberts, Michael G., 4,316,829, Cl. 260-28.5AS.
Owens-Illinois, Inc.: *See*—
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Oxford, Alexander W.; Bradshaw, John; and Coates, Ian H., to Glaxo Group Limited. Heterocyclic compounds, processes for their preparation and their use. 4,316,907, Cl. 424-275.000.
Pacala, Luba A.; and Blickensderfer, John R., to Union Carbide Corporation. Rubber modified phenolic friction particles. 4,316,827, Cl. 260-17.200.
Pacific Paper Products, Inc.: *See*—
Lloyd, William R. J., 4,316,554, Cl. 221-232.000.
Packham, Jackie F. Rag rug loom. 4,316,310, Cl. 28-149.000.
Paczkowski, John P.: *See*—
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Pall Corporation: *See*—
Cooper, Roydon B., 4,316,801, Cl. 210-90.000.
Pancheri, Eugene J., to Procter & Gamble Company, The. Liquid detergent composition containing alkyl sulfate and alkyl ethoxylated sulfate. 4,316,824, Cl. 252-551.000.
Panenka, Jaroslav R.; Pavlik, Bohuslav; and Olson, Daniel P., to Kenting Earth Sciences Limited; and Hudson's Bay Oil and Gas Company Limited. Gamma ray prospecting system. 4,317,033, Cl. 250-253.000.
Panepinto, William, Jr.; Miu, Ming T.; Nibby, Chester M., Jr.; and Shen, Jian-Kuo, to Honeywell Information Systems Inc. Data processing system having centralized memory refresh. 4,317,169, Cl. 364-200.000.
Parise, Carl; and Schulz, Rainer R., to Parise & Sons, Inc. Double disconnect, waterproof electrical connector assembly for electrified vacuum hose for wet/dry vacuum cleaner. 4,316,304, Cl. 15-339.000.
Parise, Carl; and Schulz, Rainer R., to Parise & Sons, Inc. Fast acting, nonrepairable plastic on/off valve. 4,316,600, Cl. 251-245.000.
Parise & Sons, Inc.: *See*—
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Parise, Carl; and Schulz, Rainer R., 4,316,600, Cl. 251-245.000.
Parker, Ellery: *See*—
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Parlman, Robert M., to Phillips Petroleum Company. Flotation agent and process. 4,316,797, Cl. 209-166.000.
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Paszthory, Emmerich; Seifert, Karl G.; Zimmermann, Vincenz; and Nestler, Hans J., to Hoechst Aktiengesellschaft. Process for the preparation of 4-phenoxy-phenols. 4,316,993, Cl. 568-637.000.
Patchett, Arthur A.: *See*—
Thorsett, Eugene D.; Patchett, Arthur A.; Harris, Elbert E.; and Maycock, Alan L., 4,316,896, Cl. 424-200.000.
Paul, Henry N., 3rd, to Thiokol Corporation. Insulating glass sealant and related compositions. 4,316,979, Cl. 528-109.000.
Paver, Roger: *See*—
Mercer, Alec V.; and Paver, Roger, 4,316,815, Cl. 252-301.220.
Pavlik, Bohuslav: *See*—
Panenka, Jaroslav R.; Pavlik, Bohuslav; and Olson, Daniel P., 4,317,033, Cl. 250-253.000.
Pazzaglia, Daniele: *See*—
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Pedder, David J.; and Warner, David J., to Plessey Handel und Investments AG. Pyroelectric detectors. 4,317,063, Cl. 313-388.000.
Pelloso, Turiddu A.; and Kogan, Lawrence, to Nabisco Brands, Inc. Sunflower-oil-based edible fat product. 4,316,919, Cl. 426-603.000.
Penn, Silas. Auxiliary windshield and window wiper. 4,316,303, Cl. 15-250.300.
Pennwalt Corporation: *See*—
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Peri-Werk Artur-Schworer KG: *See*—
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Perine, Donald R.; and Lucas, Peter A., to Dow Chemical Company, The. Aqueous epoxy phosphate dispersions comprising n-butanol, n-hexanol and ethylene glycol monobutyl ether. 4,316,922, Cl. 428-35.000.
Peris Y Saborit, Gilles: *See*—
Guigues, Francois; Peris Y Saborit, Gilles; and Borrod, Guy, 4,316,737, Cl. 71-88.000.
Perka, Francis A. Therapeutic positioning device. 4,316,454, Cl. 128-77.000.
Perplies, Eberhard: *See*—
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Perry, Fred G., to General Electric Company. Arrangement for remote control of repeater stations. 4,317,218, Cl. 455-54.000.
Persson, Frans-Erik. Automatic lottery ticket vending machine. 4,316,553, Cl. 221-167.000.
Pessier, Rudolph C. O., to Hughes Tool Company. Shaft drill bit with improved cutter bearing and seal arrangement and cutter insert arrangement. 4,316,515, Cl. 175-372.000.
Petersen, Alex: *See*—
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Petersen, Fred: *See*—
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Peterson, Robert W., to Texas Instruments Incorporated. Remotely controlled circuit breaker system. 4,317,094, Cl. 335-13.000.
Peterson, Walter L., to Select Laboratories, Inc. Poultry vaccination system. 4,316,464, Cl. 128-253.000.
Peterson, Wesley R.: *See*—
Davidson, Donald R.; and Peterson, Wesley R., 4,316,562, Cl. 223-102.000.
Petersson, Stefan; and Alstad, Sven O., to Kockums Industri AB. Continuous belt press with capacitative heating means. 4,316,709, Cl. 425-174.80E.
Petitpierre, Jean C., to Ciba-Geigy Corporation. Pressure-sensitive or heat-sensitive recording material. 4,316,621, Cl. 282-27.500.
Petrak, Karel L., to Eastman Kodak Company. Polymers from nitrogen heterocyclic compounds. 4,316,972, Cl. 525-336.000.
Petreilis, Pano C.; Lien, Larry A.; and Zarr, Wesley E., to Minnesota Mining and Manufacturing Company. Photoreactive oligomer composition and printing plate. 4,316,949, Cl. 430-159.000.

Pfaff Haushaltmaschinen GmbH: *See—*
Hanus, Helfried; Winkler, Uwe; and Kemmel, Patrice J., 4,317,032, Cl. 250-231.0SE.

Pfeiffer, Ronald E.; and DeMaria, Francesco, to American Cyanamid Company. Apparatus for preparing open structure fibers. 4,316,714, Cl. 425-382.200.

Pfizer Inc.: *See—*
Kita, Donald A.; and Fenton, Dennis M., 4,316,960, Cl. 435-137.000.

Pallagro: *See—*
Guigues, Francois; Peris Y Saborit, Gilles; and Borrod, Guy, 4,316,737, Cl. 71-88.000.

Philipenko, Harry. Soil sampler and mounting arrangement. 4,316,393, Cl. 73-864.450.

Phillips Petroleum Company: *See—*
McLemore, Jerry R., 4,316,559, Cl. 222-225.000.
Mills, King L.; and Johnson, Paul H., 4,316,876, Cl. 422-151.000.
Parlman, Robert M., 4,316,797, Cl. 209-166.000.
Van Pool, Joe, 4,316,998, Cl. 585-712.000.
Welch, Melvin B.; and Dietz, Richard E., 4,316,818, Cl. 252-429.00B.

Phipps, Peter; and Spector, George. Air-assisted hydraulic re-circulatory bouyancy pump. 4,316,680, Cl. 406-49.000.

Photis, James M., to Stauffer Chemical Company. Preparation of arylphosphinic acids. 4,316,859, Cl. 260-502.40R.

Pickett, Terence D.; and Formwalt, Charles W., Jr., to Deere & Company. Fiber optic signal conditioning circuit. 4,317,232, Cl. 455-606.000.

Pieri, Lorenzo: *See—*
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,316,839, Cl. 260-239.30T.

Pierrel, Michel, to Pont-a-Mousson S.A. Method and installation for centrifugal casting. 4,316,495, Cl. 164-457.000.

Pilkington Brothers Limited: *See—*
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Pinckaers, B. Hubert: *See—*
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Pinkston, Bruce H. W.: *See—*
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Pinsky, Michael L.; Finley, Joseph H.; and Lutz, Charles W., to FMC Corporation. Stabilized sodium carbonate peroxide preparation method. 4,316,879, Cl. 423-265.000.

Pioneer Electronic Corporation: *See—*
Kawasaki, Atsushi; and Munakata, Yukio, 4,317,103, Cl. 338-160.000.
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Pip, Wolfgang: *See—*
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Pirelli Cable Corp.: *See—*
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Pitney Bowes Inc.: *See—*
Keyt, F. Gene; and Illk, Donald J., 4,317,136, Cl. 358-256.000.

Pitruzzello, Michael C., to United States of America, Army. Focus detection circuitry. 4,317,135, Cl. 358-227.000.

Pittet, Alan O.; and Muralidhara, Ranya, to International Flavors & Fragrances Inc. Process for preparing vinyl phenol. 4,316,995, Cl. 568-780.000.

Planeta, Eugene J. Lawn mower for cutting on an inclined surface. 4,316,356, Cl. 56-16.200.

Plastics Engineering Company: *See—*
D'Alelio, Gaetano F.; and Waitkus, Phillip A., 4,316,845, Cl. 260-326.00S.
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Waitkus, Phillip A.; and D'Alelio, Gaetano F., 4,316,844, Cl. 260-326.00S.

Plessey Handel und Investments AG: *See—*
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Pletka, Hans-Dieter: *See—*
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Plimpton, Thomas L., administrator: *See—*
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Plough, Stephan E.; and Swartzendruber, David L., to Plough, Stephan E. Wallet with badge holder. 4,316,492, Cl. 150-35.000.

Pobst, David F., Jr.; and Bailey, Jesse M., Jr., to Sid Richardson Carbon & Gasoline Co. Carbon black process utilizing an improved burner. 4,316,881, Cl. 423-456.000.

Polaroid Corporation: *See—*
Cincotta, Louis; and Foley, James W., 4,316,950, Cl. 430-221.000.
Wray, William R., 4,317,142, Cl. 360-67.000.

Polc, Petar: *See—*
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,316,839, Cl. 260-239.30T.

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Pommer, Dennis L.; and Coleman, Paul E., to General Mills, Inc. Digital moisture meter and method for determining percent weight loss. 4,316,384, Cl. 73-76.000.

Pont-a-Mousson S.A.: *See—*
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Poole, Douglas, to Lizzy Emergency Systems, Inc. Oil well blow-out safety system. 4,316,506, Cl. 169-69.000.

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PPG Industries, Inc.: *See—*
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Girgis, Mikhail M., 4,316,968, Cl. 525-135.000.
Lawhon, Robert A.; and Yigdall, Jeffrey S., 4,316,733, Cl. 65-99.00A.
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Precision Metalsmiths, Inc.: *See—*
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Prescott, Thomas J.; and Wetzel, Raymond L., to Hooker Chemicals & Plastics Corp. Electrical resistance coating for steel. 4,316,751, Cl. 148-6.15Z.

Preussag Aktiengesellschaft: *See—*
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Price, William A., to Bova, Anthony J. Method and device for eliminating air from water bed mattresses. 4,316,489, Cl. 141-1.000.

Priesnitz, Uwe: *See—*
Fuchs, Rainer; Maurer, Fritz; Priesnitz, Uwe; and Riebel, Hans-Jochem, 4,316,994, Cl. 568-639.000.

Procter & Gamble Company, The: *See—*
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Propster, Mark A.; and Hohman, Charles M., to Owens-Corning Fiberglas Corporation. Bypass wedge for drying and preheating glass batch agglomerates. 4,316,732, Cl. 65-27.000.

Protoned BV: *See—*
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Proudlove, Michael J.: *See—*
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Pui, David Y. H.: *See—*
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Pyle, Stoddard H.: *See—*
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Quesnell, Harris A., Jr., to United States of America, Navy. Manchester code decoding apparatus. 4,317,211, Cl. 375-87.000.

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Reynolds, Clarke; and Quigley, Richard J., 4,316,578, Cl. 238-283.000.

R. A. Jones & Co. Inc.: *See—*
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R. Martin & Associates: *See—*
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Ragoza, Igor V.; Dalidovich, Alexandr S.; Begunov, Petr M.; Vasiljuk, Petr J.; Tonikian, Robert T.; Tonikian, Dina N.; and Makarenko, Alexandr V. Circular warp knitting machine. 4,316,369, Cl. 66-81.000.

Rahm, Juerg; and Schulz, Peter, to Hoffmann-La Roche Inc. Ring of cells for analytical devices. 4,316,872, Cl. 422-102.000.

Rajadhyaksha, Vithal J., to Nelson Research & Development Co. Vehicle composition containing 1-substituted azacycloalkan-2-ones. 4,316,893, Cl. 424-180.000.

Rakhit, Sumanas, to Ayerst, McKenna and Harrison, Inc. Acyl derivatives of rapamycin. 4,316,885, Cl. 424-122.000.

Randall, Russel R., to Dresser Industries, Inc. Method and apparatus for measuring neutron characteristics of material surrounding a borehole. 4,317,034, Cl. 250-262.000.

Ratka, Frances I.: *See—*
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Ray, Charles A.; and Kent, John L., to Anthony Manufacturing Company. Multi-purpose seal for pop-up sprinkler. 4,316,579, Cl. 239-123.000.

Raychem Corporation: *See—*
Middleman, Lee M.; and Evans, Joseph H., 4,317,027, Cl. 219-553.000.

Raytheon Company: *See—*
Bowen, Robert F., 4,317,017, Cl. 219-10.55E.

RCA Corporation: *See—*
Altenschulte, Raymond A., 4,317,152, Cl. 361-104.000.
Ben-Dov, Oded, 4,317,122, Cl. 343-798.000.
Boyd, William M., 4,317,083, Cl. 330-296.000.
Castle, Richard M., 4,317,192, Cl. 369-244.000.
Farmer, Felta C., Jr., 4,317,223, Cl. 455-115.000.
Fernsler, Ronald E.; and Willis, Donald H., 4,317,133, Cl. 358-158.000.
Henderson, John G. N.; and Wine, Charles M., 4,317,225, Cl. 455-158.000.
Hsu, Sheng T., 4,317,110, Cl. 340-825.910.
Hughes, Richard H., 4,317,065, Cl. 313-414.000.

Jolly, Stuart T.; and Paczkowski, John P., 4,316,430, Cl. 118-725.000.
Nossen, Edward J., 4,317,206, Cl. 375-10.000.
Royce, Martin R.; and Shaffer, Donnavon D., 4,316,816, Cl. 252-301.60S.
Torrington, Leslie A., 4,316,539, Cl. 206-307.000.
Warren, Henry R., 4,317,140, Cl. 360-10.000.
Whitehurst, Marshal L., 4,316,778, Cl. 204-5.000.
Wine, Charles M., 4,317,050, Cl. 307-541.000.

Recognition Equipment Incorporated: *See*—
Warthan, Jerry G., 4,317,029, Cl. 235-454.000.

Reece, John W., to NCR Corporation. Imaging and scanning system. 4,317,004, Cl. 178-15.000.

Regie Nationale des Usines Renault: *See*—
Bouvet, Jean M.; Berthou, Claude; and Jallas, Michel, 4,316,599, Cl. 251-129.000.

Reichter, Kenneth A.: *See*—
Marcham, Douglas H.; and Reichter, Kenneth A., 4,316,945, Cl. 429-222.000.

Renault, Philippe: *See*—
Bocard, Christian; Delacour, Jacques; and Renault, Philippe, 4,316,804, Cl. 210-671.000.

Reynolds, Clarke; and Quigley, Richard J. Direct fixation rail fastener utilizing a pad of elastomer. 4,316,578, Cl. 238-283.000.

Reynolds, J. Louis; and O'Brien, Paul R., to Reynolds Metals Company. Multi-styled aluminum wheel. 4,316,637, Cl. 301-37.00R.

Reynolds Metals Company: *See*—
Lee, Harry W., Jr., 4,316,375, Cl. 72-105.000.
Reynolds, J. Louis; and O'Brien, Paul R., 4,316,637, Cl. 301-37.00R.

Richards, Raymond R.; and Gulliksen, John E., to Koehler Manufacturing Co. Battery operated luminaire with emergency switching means. 4,317,162, Cl. 362-106.000.

Richter Gedeon Vegyeszeti Gyar Rt.: *See*—
Bajusz, Sandor; Szell nee Hasenohrl, Erzsebet; Barabas, Eva; and Bagdy, Daniel, 4,316,889, Cl. 424-177.000.

Richter, Hans H., to Marshall and Williams Company. Tentering clip chain. 4,316,309, Cl. 26-93.000.

Riebel, Hans-Jochem: *See*—
Fuchs, Rainer; Maurer, Fritz; Priesnitz, Uwe; and Riebel, Hans-Jochem, 4,316,994, Cl. 568-639.000.

Rieger, Werner; and Elsasser, Horst A. Chain conveyor. 4,316,537, Cl. 198-731.000.

Rijckaert, Albert M. A.: *See*—
De Niet, Edmond; and Rijckaert, Albert M. A., 4,317,144, Cl. 360-76.000.

Riley, Peter W.: *See*—
Jepson, Walter B.; Riley, Peter W.; and Hocking, David, 4,316,798, Cl. 209-223.00R.

Rim, Yong S.; Davison, John A.; and Nudenberg, Walter, to Uniroyal, Inc. Modified monoolefin copolymer elastomer with improved heat and oil resistance. 4,316,971, Cl. 525-310.000.

Rink, Hans: *See*—
Kamber, Bruno; Rink, Hans; and Sieber, Peter, 4,316,890, Cl. 424-177.000.

Ritzling, Bertil, to Forenade Fabriksverken. Method and apparatus for adjusting roller rings on a shaft. 4,316,317, Cl. 29-468.000.

Rivette, Denni F.; Morrison, Howard J.; and Montague, Douglas P., to Marvin Glass & Associates. Toy decorative curtain/door. 4,316,345, Cl. 46-1.00R.

Robbins, Wayne E.: *See*—
Botte, Anthony J.; Hubbard, James H.; Robbins, Wayne E.; and Spivey, Paul R., 4,317,203, Cl. 371-60.000.

Robert Dougan Construction Co.: *See*—
Vaseen, Vesper A., 4,317,044, Cl. 422-186.300.

Roberts, Michael G., to Owens-Corning Fiberglas Corporation. Modified asphalt compositions. 4,316,829, Cl. 260-28.5AS.

Roberts, Thomas G., to United States of America, Army. Capillary waveguide laser with cooled porous walls. 4,317,088, Cl. 372-92.000.

Roberts, Wayne R.: *See*—
Mayo, George L., 4,316,400, Cl. 83-425.200.

Robinson, Jerry T.: *See*—
Edwards, Earl G.; Robinson, Jerry T.; and Wilzbach, Bernard L., 4,316,667, Cl. 355-3.0SH.

Rockwell International Corporation: *See*—
Johnson, Raymond E., 4,317,198, Cl. 370-112.000.
Lange, Frederick F., 4,316,964, Cl. 501-105.000.

Roesler, Layton S. Seat mounting apparatus. 4,316,634, Cl. 297-349.000.

Roessler, Peter: *See*—
Grotkopp, Detlef; Wedemeyer, Karlfried; Brandes, Wilhelm; Scheinpflug, Hans; and Roessler, Peter, 4,316,912, Cl. 424-300.000.

Rohm GmbH: *See*—
Maier, Leonhard; and Pip, Wolfgang, 4,316,934, Cl. 428-308.400.

Rolando, John V.: *See*—
Kiowski, John W.; and Rolando, John V., 4,316,702, Cl. 417-12.000.

Rolsma, Barney: *See*—
Nagamatsu, Brian H.; and Rolsma, Barney, 4,316,435, Cl. 122-235.00F.

Romandi, Denes, to Siemens Aktiengesellschaft. X-ray diagnostic generator. 4,317,039, Cl. 250-418.000.

Roodenrijs, Jacques P.: *See*—
Van Pelt, Willem; and Roodenrijs, Jacques P., 4,316,368, Cl. 62-542.000.

Rosenbluth, Alan E.; and Forsyth, James M., to University of Rochester, The. Normal incidence x-ray reflectors and resonant cavities for supporting laser action using the same. 4,317,043, Cl. 250-510.000.

Roskelley, Milton. Reinforcing removable post pocket tie-down. 4,316,688, Cl. 410-102.000.

Rosocha, Louis A.: *See*—
Fitzsimmons, William A.; and Rosocha, Louis A., 4,317,067, Cl. 315-150.000.

Rothen, Johann: *See*—
Weise, Lutz; and Rothen, Johann, 4,316,641, Cl. 303-92.000.

Rothschild, Harvey, to Featherspring International Corporation. Separable fastener for removable foot supports. 4,316,333, Cl. 36-50.000.

Rowley, William W. Plastic tube, coupling, and method of forming same. 4,316,870, Cl. 264-296.000.

Royce, Martin R.; and Shaffer, Donnavon D., to RCA Corporation. Method for preparing copper-aluminum-gold-activated zinc-sulfide phosphors. 4,316,816, Cl. 252-301.60S.

Rubinstein, Solomon: *See*—
Silver, David A.; Lukac, Rudolf G.; and Rubinstein, Solomon, 4,317,001, Cl. 174-102.0SC.

Rueter, Wolfgang: *See*—
Wetzel, Bernd; Waitun, Eberhard; Maier, Roland; Rueter, Wolfgang; Lechner, Uwe; and Goeth, Hans, 4,316,898, Cl. 424-246.000.

Rugg, Barry A.; and Brenner, Walter, to New York University. Process for the chemical conversion of cellulose waste to glucose. 4,316,747, Cl. 127-37.000.

Rugg, Barry A.; and Stanton, Robert, to New York University. Process for the acid hydrolysis of waste cellulose to glucose. 4,316,748, Cl. 127-37.000.

Ruhrtal Elektrizitats-Gesellschaft Hartig GmbH & Co.: *See*—
Hartig, Alfred; and Beckermann, Harald, 4,317,167, Cl. 364-185.000.

Rule, Barbara A. Child's lounging garment. 4,316,287, Cl. 2-69.500.

Ruminsky, Robert T.: *See*—
Mueller, Dale A.; Ruminsky, Robert T.; Serber, Stephen L.; and Wolfgram, Rodger C., 4,316,365, Cl. 62-151.000.

Russo, David A.: *See*—
Gitlitz, Melvin H.; Engelhart, John E.; and Russo, David A., 4,316,853, Cl. 260-429.700.

Russo, Joseph L.; and Sonder, Richard, to Thonet Industries, Inc. Composite mattress system. 4,316,298, Cl. 5-465.000.

Russo Manufacturing Corp.: *See*—
Russo, Richard A., 4,316,446, Cl. 126-200.000.

Russo, Richard A., to Russo Manufacturing Corp. Woodburning heater with protected viewing window. 4,316,446, Cl. 126-200.000.

Rustioni, Massimo; and Balducci, Luigi, to Montedison S.P.A. Molybdenum or tungsten containing bismuth vanadate yellow pigments and process for preparing same. 4,316,746, Cl. 106-288.00B.

Ryan, Frederick M.: *See*—
Miller, Robert C.; and Ryan, Frederick M., 4,316,388, Cl. 73-356.000.

S&C Electric Company: *See*—
Sabis, Richard J., 4,317,099, Cl. 337-170.000.

S&S Corrugated Paper Machinery Co., Inc.: *See*—
Flaum, Stephen S.; and Zielinski, Jozef Z., 4,316,428, Cl. 118-203.000.
Flaum, Stephen S.; and Leff, Martin J., 4,316,755, Cl. 156-205.000.

Saar, David A.; and Bradus, Robert, to Black & Decker Inc. Microcomputer controlled power tool. 4,317,176, Cl. 364-474.000.

Sabis, Richard J., to S&C Electric Company. Fuse link. 4,317,099, Cl. 337-170.000.

Sachs-Systemtechnik GmbH: *See*—
Stengl, Rupert, 4,317,156, Cl. 361-171.000.

Saida, Toycyasu; Shimokawa, Takatatsu; Yanagisawa, Yuzuru; Nagahama, Takashi; and Ishida, Koji, to Toyo Enginnering Corporation; and Mitsui Toatsu Chemicals Incorporated. Process for concentrating aqueous urea solutions. 4,316,767, Cl. 159-47.0UA.

Saint-Gobain Industries: *See*—
Battigelli, Jean A.; and Pouquet, Francois, 4,316,865, Cl. 264-109.000.

Saito, Syuichiro, to Canon Kabushiki Kaisha. Electromagnetically operated shutter. 4,316,661, Cl. 354-234.000.

Saitoh, Takashi: *See*—
Harada, Mikio; Tachibana, Kan-ichi; Uchida, Akio; and Saitoh, Takashi, 4,317,155, Cl. 361-120.000.

Saitou, Sinichi: *See*—
Satoh, Ken; Saitou, Sinichi; Kato, Toshikazu; Watanabe, Seizo; Nishiyama, Toyoo; Shimoda, Misao; Shibata, Tutomu; and Kimura, Kenji, 4,316,590, Cl. 242-199.000.

Sakai, Takashi: *See*—
Suzuki, Migaku; and Sakai, Takashi, 4,316,475, Cl. 131-340.000.

Sakuranaka, Toru; Kobayashi, Masayoshi; and Nakagawa, Sachio, to Diesel Kiki Company, Ltd. Fuel injection advance angle control apparatus. 4,316,441, Cl. 123-502.000.

Salemink, Willard L., to Assemblers, Inc. Drive mechanism for sand, etc., dredging apparatus. 4,316,336, Cl. 37-67.000.

Salk Institute for Biological Studies, The: *See*—
Guillemin, Roger C. L.; Ling, Nicholas C.; Esch, Fred S.; Bohler, Peter; and Brazeau, Paul E., Jr., 4,316,891, Cl. 424-177.000.

Salle, Jacques E.: *See*—
Athenes, Claude; Meresse, Jean L. J.; and Salle, Jacques E., 4,317,008, Cl. 179-18.0FC.

Samejima, Yasushi: *See*—
Iijima, Tokuzo; Samejima, Yasushi; Kishimoto, Kazuo; Komabashiri, Takamichi; and Kano, Toshiji, 4,316,789, Cl. 204-296.000.
Iijima, Tokuzo; Samejima, Yasushi; Kishimoto, Kazuo; Komabashiri, Takamichi; and Kano, Toshiji, 4,316,790, Cl. 204-296.000.

Sampson, Eric A. Non-exposed ski binding. 4,316,618, Cl. 280-613.000.

Sanborn, David M.; and Blackshaw, Andrew L., to E-Tech, Inc. Helically flighted heat exchanger. 4,316,502, Cl. 165-140.000.

Sanchez Velasco, Vicente. Anchorage system of the elements to be supported on the completed structure. 4,316,689, Cl. 411-57.000.

Sand, Robert H., to Vulcan Radiator Company, The. Depletion indicating mechanism for a storage bin. 4,316,427, Cl. 116-215.000.

Sander, Robert K.; Balog, George; and Seegmiller, Emma T., to United States of America, Energy. Apparatus for improving the working time of the XeBr laser. 4,317,087, Cl. 372-57.000.

Sanders, David E.: *See—*
Gordy, Robert S.; Sanders, David E.; and Chambers, Ramon P., 4,317,204, Cl. 375-1.000.

Sandoz Ltd.: *See—*
Mercer, Alec V.; and Paver, Roger, 4,316,815, Cl. 252-301.220.

Sano, Hiroshi: *See—*
Yoshida, Kohichi; Miyashita, Teruo; and Sano, Hiroshi, 4,316,780, Cl. 204-35.00N.

Sansho Kabushiki Kaisha: *See—*
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Sarkisian, Nancy L.: *See—*
Grant, Frederic F.; and Sarkisian, Nancy L., 4,316,568, Cl. 226-118.000.

Sasaki, Takashi: *See—*
Hosoi, Fumio; Sasaki, Takashi; Hagiwara, Miyuki; Kasai, Noboru; Araki, Kunio; and Hirano, Takayuki, 4,316,783, Cl. 204-159.180.

Sasashige, Hiroaki: *See—*
Hirakawa, Tadashi; Sasashige, Hiroaki; Takenaka, Hiroyuki; and Katayama, Keiichi, 4,316,761, Cl. 156-472.000.

Satake Engineering Company, Ltd.: *See—*
Satake, Toshihiko, 4,316,799, Cl. 209-504.000.

Satake, Toshihiko, to Satake Engineering Company, Ltd. Automatic control apparatus for an oscillating grain separator. 4,316,799, Cl. 209-504.000.

Sato, Nobuo: *See—*
Mineshima, Hideo; Sato, Nobuo; and Masaki, Susumu, 4,316,966, Cl. 525-53.000.

Sato, Tomoyasu: *See—*
Nara, Takashi; Okachi, Ryo; Kawamoto, Isao; Sato, Tomoyasu; and Oka, Tetsuo, 4,316,957, Cl. 435-119.000.

Satoh, Ken; Saitou, Sinichi; Kato, Toshikazu; Watanabe, Seizo; Nishiyama, Toyoo; Shimoda, Misao; Shibata, Tutomu; and Kimura, Kenji, to Olympus Optical Co., Ltd. Tape cassette. 4,316,590, Cl. 242-199.000.

Satoh, Takao: *See—*
Seita, Toru; Satoh, Takao; and Kikuchi, Mitsuo, 4,316,781, Cl. 204-98.000.

Satomi, Hitoshi, to Nichiban Kabushiki Kaisha. Binding machine. 4,316,760, Cl. 156-468.000.

Saunders Valve Company Limited: *See—*
Pearce, Michael I.; and Cocking, Glyn, 4,316,482, Cl. 137-315.000.

Sayles, David C., to United States of America, Army. Method of imparting hypergolicity to non-hypergolic rocket propellants. 4,316,359, Cl. 60-212.000.

Scanlon, Robert M.: *See—*
Gentry, Charles B.; and Scanlon, Robert M., 4,316,500, Cl. 165-9.000.

Scaramella, Gianni Q.: *See—*
Kearnes, Roger M.; and Scaramella, Gianni Q., 4,316,491, Cl. 144-39.000.

Scarlett, John C.: *See—*
Beggs, Donald; and Scarlett, John C., 4,316,739, Cl. 75-40.000.

Scarpati, Thomas S.; and Ford, Robert J., to Boeing Company, The. Composite aerodynamic rotor blade assembly. 4,316,701, Cl. 416-226.000.

Schafer, Ernst D., to ITT Industries, Inc. Braking force control device. 4,316,639, Cl. 303-6.00C.

Schau, Walter: *See—*
Maurer, Robert; and Schau, Walter, 4,317,231, Cl. 455-330.000.

Scheinpflug, Hans: *See—*
Grotkopp, Detlef; Wedemeyer, Karlfried; Brandes, Wilhelm; Scheinpflug, Hans; and Roessler, Peter, 4,316,912, Cl. 424-300.000.

Schenck, Gunther O. Multichamber photoreactor. 4,317,041, Cl. 250-435.000.

Schenk, Wolfgang; Blank, Heinz U.; Hagedorn, Ferdinand; and Evertz, Werner, to Bayer Aktiengesellschaft. Process for the preparation of sulphonic acid chlorides. 4,316,862, Cl. 260-543.00R.

Scheuerecker, Werner, to Voest-Alpine Aktiengesellschaft. Supporting and guiding stand arrangement to be used in a bow-type continuous casting plant. 4,316,494, Cl. 164-448.000.

Schiffman, Richard: *See—*
Thigpen, Ben B.; and Schiffman, Richard, 4,317,185, Cl. 367-15.000.

Schindler, Harvey D.: *See—*
Sze, Morgan C.; and Schindler, Harvey D., 4,316,792, Cl. 208-10.000.

Schlageter, Werner, to Svenska Rotor Maskiner Aktiebolag. Rotary, regenerative heat exchanger having floating sealing rings. 4,316,499, Cl. 165-9.000.

Schmitz, John B.: *See—*
Schmitz, William L.; and Schmitz, John B., 4,316,463, Cl. 128-218.00F.

Schmitz, William L.; and Schmitz, John B., to Vac-O-Cast, Inc. Corrosive protected hypodermic module. 4,316,463, Cl. 128-218.00F.

Schoen, Siegfried: *See—*
Kunde, Gerhard; Schoen, Siegfried; and Trimmel, Herwig, 4,317,233, Cl. 455-606.000.
Kunde, Gerhard; and Schoen, Siegfried, 4,317,234, Cl. 455-606.000.

Schoennagel, Hans J., to Mobil Oil Corporation. Direct conversion of residual oils. 4,316,794, Cl. 208-111.000.

Schott, Lawrence A., to Schott, Roger A., a part interest. Semi-circular thread tap. 4,316,683, Cl. 408-219.000.

Schott, Lawrence A.; and Schott, Roger A. Windmill structure and power generator. 4,316,699, Cl. 416-139.000.

Schott, Roger A.: *See—*
Schott, Lawrence A., 4,316,683, Cl. 408-219.000.
Schott, Lawrence A.; and Schott, Roger A., 4,316,699, Cl. 416-139.000.

Schramm, Burford J. Unitary, bonded-together helicopter rotorblade. 4,316,700, Cl. 416-226.000.

Schroeter, Heinz: *See—*
Kloeber, Peter; and Schroeter, Heinz, 4,317,219, Cl. 455-56.000.

Schulde, Felix: *See—*
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Schultz, Stephen J.; Zito, Ronald R.; Wehner, George O.; and Newcamp, George C., to PPG Industries, Inc. Position adjustment mechanism for flat glass forming tweel. 4,316,735, Cl. 65-164.000.

Schulz, Peter: *See—*
Rahm, Juerg; and Schulz, Peter, 4,316,872, Cl. 422-102.000.

Schulz, Rainer R.: *See—*
Parise, Carl; and Schulz, Rainer R., 4,316,304, Cl. 15-339.000.
Parise, Carl; and Schulz, Rainer R., 4,316,600, Cl. 251-245.000.

Schwab, Rolf, to Siemens Aktiengesellschaft. Spreading device for lamination stacks. 4,316,692, Cl. 414-27.000.

Schwartz, Jerome; and Infante, George J., to Taylor Lock Company. Vehicle theft prevention device. 4,317,108, Cl. 340-64.000.

Schwarz, Richard A.: *See—*
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Schwem Instruments: *See—*
Alvarez, Luis W.; and Schwemin, Arnold J., 4,316,649, Cl. 350-16.000.

Schwemin, Arnold J.: *See—*
Alvarez, Luis W.; and Schwemin, Arnold J., 4,316,649, Cl. 350-16.000.

Schweppe, Fred C., to Massachusetts Institute of Technology. Frequency adaptive, power-energy re-scheduler. 4,317,049, Cl. 307-39.000.

Schwobel, Richard: *See—*
Becker, Werner; and Schwobel, Richard, 4,316,759, Cl. 156-387.000.

Schworer, Artur, to Peri-Werk Artur-Schworer KG. Formwork panel for concrete walls. 4,316,594, Cl. 249-18.000.

Scifres, Donald R.; Connell, Neville; and Streifer, William, to Xerox Corporation. Passivation and reflector structure for electroluminescent devices. 4,317,086, Cl. 372-49.000.

Scifres, Donald R.: *See—*
Burnham, Robert D.; Scifres, Donald R.; and Streifer, William, 4,317,085, Cl. 372-50.000.

Scott, James E.: *See—*
Bentley, W. Ferrel; Luedtke, Arthur; and Scott, James E., 4,317,120, Cl. 343-120.000.

Scott, John W.: *See—*
Batcho, Andrew D.; Hengartner, Urs O.; Leimgruber, Willy; Scott, John W.; and Valentine, Donald, Jr., 4,316,847, Cl. 260-326.460.

Scott, Lawrence M.: *See—*
Wolf, Irving W.; Stafford, Michael K.; Kahan, Hillard M.; Acebo, William F.; Scott, Lawrence M.; and Lee, Yu C., 4,316,738, Cl. 75-0.5BA.

Scott, Lewis A.; and Gibson, Duane M., to Omark Industries, Inc. Chain saw. 4,316,327, Cl. 30-386.000.

Seaford, F. Leo, to Wil-Mat Corporation. Swivel caster assembly. 4,316,305, Cl. 16-21.000.

Sedalis, Patrick A., to Honeywell, Inc. Error detecting and correcting RAM assembly. 4,317,201, Cl. 371-38.000.

Seegmiller, Emma T.: *See—*
Sander, Robert K.; Balog, George; and Seegmiller, Emma T., 4,317,087, Cl. 372-57.000.

Seger, Charles C.: *See—*
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Seifert, Karl G.: *See—*
Paszthory, Emmerich; Seifert, Karl G.; Zimmermann, Vincenz; and Nestler, Hans J., 4,316,993, Cl. 568-637.000.

Seita, Toru; Satoh, Takao; and Kikuchi, Mitsuo, to Toyo Soda Manufacturing Co., Ltd. Method for electrolyzing alkali metal halide. 4,316,781, Cl. 204-98.000.

Sekiya, Mituru: *See—*
Koyama, Hiroaki; Shimizu, Shigeo; and Sekiya, Mituru, 4,316,969, Cl. 525-145.000.

Sele, Thorleif, to Ardal og Sunndal Verk a.s. Arrangement for compensating detrimental magnetic influence between two or more rows of longitudinally oriented electrolytic reduction cells, for aluminum. 4,316,788, Cl. 204-243.00M.

Select Laboratories, Inc.: *See—*
Peterson, Walter L., 4,316,464, Cl. 128-253.000.

Senturia, Stephen D.; and Togashi, Kou, to Massachusetts Institute of Technology. Oscillator that includes a charge-flow transistor. 4,317,084, Cl. 331-57.000.

Serber, Stephen L.: *See*—
Mueller, Dale A.; Ruminsky, Robert T.; Serber, Stephen L.; and Wolfgram, Rodger C., 4,316,365, Cl. 62-151.000.

Serini, Volker: *See*—
Idel, Karsten; Serini, Volker; Freitag, Dieter; and Fengler, Gerd, 4,316,980, Cl. 528-199.000.

Seshimoto, Osamu: *See*—
Namiki, Tomizo; Seshimoto, Osamu; Shinozaki, Fumiaki; Nahara, Akira; and Ikeda, Tomoaki, 4,317,123, Cl. 346-135.100.

Severin, Stanford L. Intraocular lens structure. 4,316,291, Cl. 3-13.000.

Sexton, Peter; and DeCristofaro, Nicholas J., to Allied Corporation. Homogeneous, ductile brazing foils. 4,316,572, Cl. 228-263.00R.

Shaanan, Gad: *See*—
Smith, Morley L.; and Shaanan, Gad, 4,316,301, Cl. 15-230.110.

Shaffer, Donnavon D.: *See*—
Royce, Martin R.; and Shaffer, Donnavon D., 4,316,816, Cl. 252-301.60S.

Shannon, E. Paul. Rate of turn indicator. 4,316,389, Cl. 73-504.000.

Sharp Kabushiki Kaisha: *See*—
Onishi, Soichi; and Kitano, Shigeru, 4,317,141, Cl. 360-60.000.

Shaw, Pern; and Groves, Stanley E., to Motorola, Inc. High speed synchronization circuit. 4,317,053, Cl. 307-269.000.

Shell Oil Company: *See*—
Hughes, Patrick M., 4,316,970, Cl. 525-240.000.

Shell, Thomas E.: *See*—
Taylor, Robert W.; and Shell, Thomas E., 4,316,921, Cl. 427-249.000.

Shelyazhenko, Svetlana V.: *See*—
Fialkov, Jury A.; and Shelyazhenko, Svetlana V., 4,316,989, Cl. 568-433.000.

Shen, Jian-Kuo: *See*—
Panepinto, William, Jr.; Miu, Ming T.; Nibby, Chester M., Jr.; and Shen, Jian-Kuo, 4,317,169, Cl. 364-200.000.

Shibasaki, Ichiro: *See*—
Ohmura, Kaoru; Shibasaki, Ichiro; and Kimura, Takeo, 4,316,974, Cl. 525-422.000.

Shibata, Kiyoshi: *See*—
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Shibata, Tutomu: *See*—
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Shimazaki, Masao: *See*—
Ueda, Hiroshi; Shimazaki, Masao; and Kuwazuru, Yasumitsu, 4,316,834, Cl. 260-38.000.

Shimizu, Shigeo: *See*—
Koyama, Hiroaki; Shimizu, Shigeo; and Sekiya, Mituru, 4,316,969, Cl. 525-145.000.

Shimizu, Tomohiro; and Muranaga, Yoshinobu, to Casio Computer Co., Ltd. Unused program number indicating system for a small program type electronic calculator. 4,317,183, Cl. 364-900.000.

Shimizu, Yoshiyuki, to Nippon Kogaku K.K. Condenser optical system for a microscope. 4,316,653, Cl. 350-465.000.

Shimoda, Misao: *See*—
Satoh, Ken; Saitou, Sinichi; Kato, Toshikazu; Watanabe, Seizo; Nishiyama, Toyoo; Shimoda, Misao; Shibata, Tutomu; and Kimura, Kenji, 4,316,590, Cl. 242-199.000.

Shimokawa, Takatatsu: *See*—
Saida, Toyoyasu; Shimokawa, Takatatsu; Yanagisawa, Yuzuru; Nagahama, Takashi; and Ishida, Koji, 4,316,767, Cl. 159-47.0UA.

Shinozaki, Fumiaki: *See*—
Namiki, Tomizo; Seshimoto, Osamu; Shinozaki, Fumiaki; Nahara, Akira; and Ikeda, Tomoaki, 4,317,123, Cl. 346-135.100.

Shintaku, Yoshishige, to Ibuki Kogyo Co., Ltd. Coldproof reflex horn speaker. 4,317,009, Cl. 179-115.50H.

Shipko, Frederick J.; and Norman, Robert D., to Coratomic, Inc. Organ stimulating apparatus with sealing setscrew. 4,316,471, Cl. 128-419.00P.

Shirai, Hideo: *See*—
Kawai, Mituo; Fujita, Takashi; Shirai, Hideo; Nakagawa, Masatoshi; and Abe, Hiroshi, 4,316,743, Cl. 75-124.000.

Shirasaki, Yuichi: *See*—
Yamamura, Kazuomi; Fukui, Takasuke; Iwamoto, Yoshinao; Shirasaki, Yuichi; and Fujise, Masayuki, 4,317,079, Cl. 324-326.000.

Shirato, Yoshiaki; Takatori, Yasushi; Hara, Toshitami; Nishimura, Yukuo; and Takahashi, Michiko, to Canon Kabushiki Kaisha. Ink jet recording apparatus. 4,317,124, Cl. 346-140.00R.

Shlykov, Gennady N.; Zhestkov, Vitaly I.; Tikhonov, Valentin N.; Dyachkov, Vasily M.; and Kudelin, Alexandr K. Pressure roll of a drafting device for a textile machine. 4,316,314, Cl. 29-123.000.

Shoaf, Myron B.: *See*—
Adams, Joan M.; Shoaf, Myron B.; Bochmann, Carl E.; and Basile, Peter A., 4,316,409, Cl. 99-275.000.

Shomura, Takashi: *See*—
Omoto, Shoji; Itoh, Jiro; Niwa, Tomizo; Shomura, Takashi; Niizato, Tetsutaro; and Inouye, Shigeharu, 4,316,894, Cl. 424-116.000.

Shoup, Thomas E., to TRW Inc. Apparatus for conducting smut-free welding. 4,317,020, Cl. 219-98.000.

Shriver, Joe E.: *See*—
Osborne, Donald L.; and Shriver, Joe E., 4,316,601, Cl. 254-86.00R.

Sibley, Lincoln L., Jr.: *See*—
Kirkpatrick, Robert G.; Snyder, Ronald R.; and Sibley, Lincoln L., Jr., 4,316,403, Cl. 89-12.000.

Sid Richardson Carbon & Gasoline Co.: *See*—
Pobst, David F., Jr.; and Bailey, Jesse M., Jr., 4,316,881, Cl. 423-456.000.

Sida, Shozo, to Sansho Kabushiki Kaisha. Blending equipment. 4,316,681, Cl. 406-162.000.

Sidwell, Shawn R., to Astes Components, Ltd. Spray painting shield. 4,316,429, Cl. 118-504.000.

Siebens, Larry N., to Amerace Corporation. Laterally flexible electrical connector assembly. 4,316,646, Cl. 339-7.000.

Sieber, Peter: *See*—
Kamber, Bruno; Rink, Hans; and Sieber, Peter, 4,316,890, Cl. 424-177.000.

Siemens Aktiengesellschaft: *See*—
Kloeber, Peter; and Schroeter, Heinz, 4,317,219, Cl. 455-56.000.
Kunde, Gerhard; Schoen, Siegfried; and Trimmel, Herwig, 4,317,233, Cl. 455-606.000.
Kunde, Gerhard; and Schoen, Siegfried, 4,317,234, Cl. 455-606.000.
Markwitz, Wernhard, 4,317,202, Cl. 371-43.000.
Romandi, Denes, 4,317,039, Cl. 250-418.000.
Schwab, Rolf, 4,316,692, Cl. 414-27.000.

Siemens-Albis AG: *See*—
Neher, Karl, 4,317,224, Cl. 455-128.000.

Siewert, Herbert G., to Tecumseh Products Company. Housing assembly for split crankcase radial compressor. 4,316,705, Cl. 417-273.000.

Sifniades, Stylianos: *See*—
Tunick, Allen A.; Largman, Theodore; and Sifniades, Stylianos, 4,316,877, Cl. 423-10.000.

SIG-Schweizerische Industrie-Gesellschaft: *See*—
Loewenthal, Horst, 4,316,354, Cl. 53-538.000.

Silberman, Ira J., to Diversified Products Corporation. Bench mounted weight lifting exerciser. 4,316,609, Cl. 272-118.000.

Silkman, William D.: *See*—
Messina, Benedicto U.; and Silkman, William D., 4,317,168, Cl. 364-200.000.

Siloam, Inc.: *See*—
Baker, John W., 4,316,462, Cl. 128-218.00N.

Silver, David A.; Lukac, Rudolf G.; and Rubinstein, Solomon, to Pirelli Cable Corp. Irradiation cross-linked polymeric insulated electric cable. 4,317,001, Cl. 174-102.0SC.

Silverman, Irving: *See*—
Varon, David S.; and Silverman, Irving, 4,316,546, Cl. 211-105.100.

Simjian, Luther G. Subscriber check accepting and issuing apparatus. 4,317,028, Cl. 235-380.000.

Simmons, Kirk A., to Stauffer Chemical Company. Preparation of arylphosphinic acids. 4,316,858, Cl. 260-502.40R.

Simon-Barron Limited: *See*—
Trickett, Stanley, 4,316,713, Cl. 425-331.000.

Singer Company, The: *See*—
Ackerman, Morris, 4,316,720, Cl. 434-224.000.
Davidson, Donald R.; and Peterson, Wesley R., 4,316,562, Cl. 223-102.000.
Ketterer, Stanley J., 4,316,421, Cl. 112-184.000.

Sinha, Brajnandan; and Tiberg, Sven-Erik, to Sinha, Brajnandan. Condition indicating device for wheeled vehicle shock absorbers. 4,317,105, Cl. 340-52.00R.

Sinkovitz, Gloria D.; and Dixon, Kenneth W., to Calgon Corporation. Water-insensitive electroconductive article comprising a substrate coated with polymers of diallyldimethylammonium chloride and N-methylolacrylamide and method of coating. 4,316,943, Cl. 428-475.800.

Skach, Allen G.; Childress, David L.; and Hayes, William V., to Dow Chemical Company, The. Machine for continuously molding solid pellets from a mud composition. 4,316,708, Cl. 425-73.000.

Skarvada, Thomas, to Crane Co. Multiple wheel memory selection device for brake control system. 4,317,173, Cl. 364-426.000.

Skerlos, Peter C., to Zenith Radio Corporation. Multi-mode automatic channel frequency synthesis system. 4,317,227, Cl. 455-180.000.

Skidmore Engineering Div. Buckeye Gear Company: *See*—
Skidmore, Ray C.; and Skidmore, Richard H., 4,316,397, Cl. 81-483.000.

Skidmore, Ray C.; and Skidmore, Richard H., to Skidmore Engineering Div. Buckeye Gear Company. Torque wrench. 4,316,397, Cl. 81-483.000.

Skidmore, Richard H.: *See*—
Skidmore, Ray C.; and Skidmore, Richard H., 4,316,397, Cl. 81-483.000.

Sladkovich, Vladlen F.: *See*—
Zelenov, Petr I.; Usachev, Petr A.; Davydov, Jury V.; Lyakhov, Vyacheslav P.; Zelenova, Irina M.; Aleinikov, Nikolai A.; Sladkovich, Vladlen F.; and Titov, Viktor I., 4,316,542, Cl. 209-39.000.

Slusarczuk, George M. J.; and Brooks, Ronald E., to General Electric Company. High density carbon adsorbent composite. 4,316,938, Cl. 428-403.000.

Small World Exchange, Inc.: *See*—
Harrison, John M., 4,317,007, Cl. 179-18.0BC.

Smith, Alvin H. Portable solar garden. 4,316,347, Cl. 47-17.000.

Smith, Morley L.; and Shaanan, Gad, to T. S. Simms & Co. Limited. Paint roller assembly. 4,316,301, Cl. 15-230.110.

Smith, Randel P., to Steiner Corporation. System for dispensing fluids. 4,316,555, Cl. 222-83.500.

Snijders, Wilfred A. M.: *See*—
Van Gerwen, Petrus J.; and Snijders, Wilfred A. M., 4,317,212, Cl. 375-113.000.

Snoke, Roy E.; and Eaders, Theodore W., to Eastman Kodak Company. Assay for neuraminic acids. 4,316,954, Cl. 435-4.000.

Snyder, Ronald R.: *See*—
Kirkpatrick, Robert G.; Snyder, Ronald R.; and Sibley, Lincoln L., Jr., 4,316,403, Cl. 89-12.000.
Sobukawa, Hideo: *See*—
Fujitani, Yoshiyasu; Muraki, Hideaki; Kondoh, Shiroh; Tomita, Makoto; Yokota, Kouji; Sobukawa, Hideo; and Nakamura, Tamotsu, 4,316,822, Cl. 252-462.000.
Societe Alsacienne de Constructions Mechaniques: *See*—
Le Chatelier, Jacques, 4,316,357, Cl. 57-95.000.
Societe Anonyme Automobiles Citroen: *See*—
Zaccariotto, Moise, 4,316,633, Cl. 297-331.000.
Societe Anonyme dite: Transaccompagnie pour le Developpement des Transactions Automatiques: *See*—
Buys, Henri; and Carisey, Camille, 4,316,606, Cl. 271-10.000.
Societe d'Assistance Technique pour Produits Nestle S.A.: *See*—
Adamer, Siegfried, 4,316,916, Cl. 426-329.000.
Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, "S.N.E.C.M.A.": *See*—
Melicque, Gaston E. E., 4,316,675, Cl. 403-22.000.
Sohn, Stephen W.: *See*—
Tu, Hosheng; and Sohn, Stephen W., 4,316,819, Cl. 252-430.000.
Solar Unlimited, Inc.: *See*—
Bowden, Donald R.; and Novell, Bruce J., 4,316,501, Cl. 165-70.000.
Solco Basel AG.: *See*—
de Schrijver, Marc, 4,316,883, Cl. 424-1.000.
Solypa, Joseph. Implement for collecting pet manure. 4,316,627, Cl. 294-1.0BA.
Somos, Andras; Turi, Istvan; Zatyko, Ferenc; Gyuros, Janos; and Borsody, Laszlo, to Kerteszeti Egyetem. Process and apparatus for the utilization of solar and geothermal energy in double wall structures. 4,316,450, Cl. 126-432.000.
Sonder, Richard: *See*—
Russo, Joseph L.; and Sonder, Richard, 4,316,298, Cl. 5-465.000.
Song, Hu-Kuo. Washing machine for dishes. 4,316,477, Cl. 134-96.000.
Sontek Industries, Inc.: *See*—
Bodai, Conrad A., 4,316,580, Cl. 239-466.000.
Sony Corporation: *See*—
Kimura, Shigeo; and Yamada, Toshihiko, 4,316,927, Cl. 428-216.000.
Tatara, Shokichi, 4,317,191, Cl. 369-147.000.
Spauschus, Hans O. Vapor compression refrigerant system monitor. 4,316,364, Cl. 62-129.000.
Spector, George: *See*—
Goon, Harry; and Spector, George, 4,316,625, Cl. 291-1.000.
Phipps, Peter; and Spector, George, 4,316,680, Cl. 406-49.000.
Speer, Spencer J., to General Dynamics, Pomona Division. Mixing device for simultaneously dispensing two-part liquid compounds from packaging kit. 4,316,673, Cl. 366-337.000.
Speigel, Kenneth, to North American Philips Consumer Electronics Corp. Method of forming a cathode and integral spacer. 4,316,313, Cl. 29-25.180.
Spenceley, Gene D., to British Steel Corporation. Continuous casting of metal strip. 4,316,496, Cl. 164-477.000.
Speranza, George P.; Cuscurida, Michael; and Zimmerman, Robert L., to Texaco Inc. Modification of polyols with epoxy resins. 4,316,991, Cl. 568-609.000.
Sperry Corporation: *See*—
Chi, Chao S., 4,317,148, Cl. 360-119.000.
Dohogne, James R., 4,316,394, Cl. 74-5.460.
Osborne, Donald L.; and Shriver, Joe E., 4,316,601, Cl. 254-86.00R.
Spethmann, Jens, to Electric Electronic Service Jens Spethmann, Firma. High frequency radiation therapy apparatus. 4,316,474, Cl. 128-804.000.
Spicer, Lyndon R., to International Standard Electric Corporation. Multi-core power cable. 4,317,002, Cl. 174-105.00R.
Spinosa, Emilio D.; and Ensminger, Dale, to Battelle Memorial Institute. Removing inclusions. 4,316,734, Cl. 65-135.000.
Spisak, Edward G. Wheel trim. 4,316,638, Cl. 301-37.00P.
Spivey, Paul R.: *See*—
Botte, Anthony J.; Hubbard, James H.; Robbins, Wayne E.; and Spivey, Paul R., 4,317,203, Cl. 371-60.000.
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Dequasie, Andrew, 4,317,158, Cl. 361-272.000.
Dequasie, Andrew, 4,317,159, Cl. 361-318.000.
SPS Technologies, Inc.: *See*—
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Stabilus GmbH: *See*—
Langanke, Rolf, 4,317,014, Cl. 200-61.620.
Stafford, Michael K.: *See*—
Wolf, Irving W.; Stafford, Michael K.; Kahan, Hillard M.; Acebo, William F.; Scott, Lawrence M.; and Lee, Yu C., 4,316,738, Cl. 75-0.5BA.
Stamicarbon, B.V.: *See*—
Van Gasse, Rene L. E., 4,316,869, Cl. 264-255.000.
Stana, Regis R.; and Tiepel, Erich W., to Uranerz U.S.A. Inc; Wyoming Mineral Corp.; and Minatome Corp. Recovery of uranium from enriched solution by a membrane separation process. 4,316,800, Cl. 210-651.000.
Standard Oil Co., The: *See*—
Grasselli, Robert K.; Suresh, Dev D.; Brazdil, James F.; and Ratka, Frances I., 4,316,855, Cl. 260-465.300.
Guttmann, Andrew T.; and Grasselli, Robert K., 4,316,856, Cl. 260-465.300.
Standard Oil Company (Indiana): *See*—
Griffith, Thomas D.; and Denham, Daniel S., 4,316,809, Cl. 252-8.55D.
Stanton, Robert: *See*—
Rugg, Barry A.; and Stanton, Robert, 4,316,748, Cl. 127-37.000.
Stanton, Robert M.: *See*—
Brown, John F.; and Stanton, Robert M., 4,316,920, Cl. 427-96.000.
Starnes, Roger A. Low wattage electric oven for mobile vehicles. 4,317,025, Cl. 219-202.000.
Statni vyzkumny ustav materialu: *See*—
Kupf, Lubomir; Adamek, Radomil; and Mursec, Mirko, 4,316,803, Cl. 210-455.000.
Stauffer Chemical Company: *See*—
Evans, John W.; and Young, Gary C., 4,316,749, Cl. 127-55.000.
Photis, James M., 4,316,859, Cl. 260-502.40R.
Simmons, Kirk A., 4,316,858, Cl. 260-502.40R.
Stefani, Eugenio: *See*—
Manini, Benito; Furia, Edoardo; Stefani, Eugenio; Baldi, Giuliano; Barracchia, Pasquale; Cacciapuoti, Beniamino; and Mattei, Bruno, 4,316,488, Cl. 139-13.00R.
Steffen, Howard W., to United States Steel Corporation. Stockline armor construction for blast furnaces. 4,316,603, Cl. 266-282.000.
Steiner Corporation: *See*—
Smith, Randel P., 4,316,555, Cl. 222-83.500.
Steiner, Erwin, to American Sussen Corp. Yarn conditioning plant. 4,316,370, Cl. 68-5.00D.
Stendel, Wilhelm: *See*—
Fuchs, Rainer; Hammann, Ingeborg; and Stendel, Wilhelm, 4,316,913, Cl. 424-304.000.
Stengl, Rupert, to Sachs-Systemtechnik GmbH. Locking device. 4,317,156, Cl. 361-171.000.
Stengle, Edward J., Jr., to Owens-Illinois, Inc. Heat-resistant composite material for hot glass handling and method of making same using a phenyl polysiloxane coating. 4,316,930, Cl. 428-266.000.
Stephen A. Young Corporation: *See*—
Christiansen, Gerald E.; and Politz, William E., 4,316,485, Cl. 137-625.400.
Sterling, Thomas L.; and Kirtley, James L., Jr., to Massachusetts Institute of Technology. Dynamic rate integrating demand monitor. 4,317,175, Cl. 364-464.000.
Stetter, Jorg; Homeyer, Bernhard; Hammann, Ingeborg; and Elbe, Hans-Ludwig, to Bayer Aktiengesellschaft. Combating arthropods with substituted 2-carbamoyloximino-butanes. 4,316,910, Cl. 424-298.000.
Steyr-Daimler-Puch Aktiengesellschaft: *See*—
Lenz, Wolfgang; Albenberger, Johann; and Knell, Karl, 4,316,631, Cl. 297-284.000.
Stimple, James R.: *See*—
Craig, Timothy P.; Stimple, James R.; and Erickson, Paul M., 4,317,229, Cl. 455-277.000.
Stog, Wilhelm. Hood car for the absorption of emissions liberated upon pushing of coke ovens. 4,316,773, Cl. 202-263.000.
Stokes, W. Fred; Bradford, Fairey S.; and Strobel, Nancy S. Competition game machine. 4,316,611, Cl. 273-85.00D.
Stoneback, W. Keith, to American Hospital Supply Corporation. Method of draping a surgical patient. 4,316,455, Cl. 128-132.00D.
Stoneback, W. Keith, to American Hospital Supply Corporation. Surgical drape system. 4,316,456, Cl. 128-132.00D.
Stranders, Rolf, to ICM Cassettes Merchandiser Limited. Spool hub for tape cartridges or the like. 4,316,589, Cl. 242-197.000.
Streifer, William: *See*—
Burnham, Robert D.; Scifres, Donald R.; and Streifer, William, 4,317,085, Cl. 372-50.000.
Scifres, Donald R.; Connell, Neville; and Streifer, William, 4,317,086, Cl. 372-49.000.
Strobel, Nancy S.: *See*—
Stokes, W. Fred; Bradford, Fairey S.; and Strobel, Nancy S., 4,316,611, Cl. 273-85.00D.
Stutzle, Dietmar: *See*—
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Sullivan, James D., to Vanner, Inc. Inverter having improved efficiency and regulation. 4,317,165, Cl. 363-41.000.
Sumitomo Metal Industries, Ltd.: *See*—
Masui, Takeshi; Masui, Yoshiro; Hiramatu, Teruo; and Yamada, Tomisabro, 4,316,376, Cl. 72-161.000.
Sunkist Growers, Inc.: *See*—
Benoun, Samie; and Lacy, Charles R., 4,316,557, Cl. 222-129.100.
Suominen, Heikki S. Bag support and dispensing apparatus. 4,316,353, Cl. 53-384.000.
Suresh, Dev D.: *See*—
Grasselli, Robert K.; Suresh, Dev D.; Brazdil, James F.; and Ratka, Frances I., 4,316,855, Cl. 260-465.300.
Suzuki, Atsushi; Urabe, Koichi; Yamada, Hiromichi; and Kohno, Hideki, to Hitachi, Ltd. Radiation detection apparatus. 4,317,037, Cl. 250-367.000.
Suzuki, Ichiro; Motonami, Masanao; and Ogawa, Hisashi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Passive seatbelt system. 4,316,619, Cl. 280-804.000.
Suzuki, Kiyoshi; and Kawashima, Hirokuni, to Canon Kabushiki Kaisha. Cadmium sulfide for electrophotography. 4,316,947, Cl. 430-94.000.
Suzuki, Migaku; and Sakai, Takashi, to Mitsubishi Rayon Co.; and Mitsubishi Adetate Co. Tobacco smoke filter plug and producing method therefor. 4,316,475, Cl. 131-340.000.
Suzuki, Minoru; Murakami, Toshiaki; Inamura, Takahiro; Inukai, Takashi; and Enomoto, Youichi, to Nippon Telegraph & Telephone Public

Corporation. Oxide superconductor Josephson junction and fabrication method therefor. 4,316,785, Cl. 204-192.00S.
Suzuki, Mitsuo: *See*—
Tanaka, Hiroyoshi; Fujii, Shigeru; and Suzuki, Mitsuo, 4,316,937, Cl. 428-376.000.
Suzuki, Shunichi; Koba, Yoshinori; Yamada, Yoshiaki; Aoto, Teruaki; Kuno, Yoriyoshi; and Yokota, Masanobu, to Meinan Machinery Works, Inc. Apparatus of manufacturing plywood. 4,316,758, Cl. 156-351.000.
Suzuki, Takeomi; Ida, Masatoshi; and Kenjyo, Hideyuki, to Olympus Optical Company Limited. Apparatus for electrically detecting focal point of cameras or the like optical devices. 4,316,657, Cl. 354-23.00D.
Suzuta, Mikio: *See*—
Mochizuki, Noritaka; Minami, Setsuo; Matsui, Yoshiya; Midorikawa, Koyo; Tsunoda, Atsuo; Murase, Hidetoshi; Suzuta, Mikio; and Moriwaki, Masazumi, 4,316,665, Cl. 355-1.000.
Svenska Rotor Maskiner Aktiebolag: *See*—
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Swank, Robert K.: *See*—
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Blalock, Sherman S., 4,317,058, Cl. 310-24.000.
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Sze, Morgan C.; and Schindler, Harvey D., to Lummus Company, The. Hydroliquefaction of coal. 4,316,792, Cl. 208-10.000.
Sze, Morgan C., to Lummus Company, The. Hydroliquefaction of coal. 4,316,793, Cl. 208-10.000.
Szell nee Hasenohrl, Erzsebet: *See*—
Bajusz, Sandor; Szell nee Hasenohrl, Erzsebet; Barabas, Eva; and Bagdy, Daniel, 4,316,889, Cl. 424-177.000.
T. S. Simms & Co. Limited: *See*—
Smith, Morley L.; and Shaanan, Gad, 4,316,301, Cl. 15-230.110.
Tabata, Toshio; and Uemura, Hiroki, to Pioneer Electronic Corporation. Tuning system for CATV terminal. 4,317,215, Cl. 455-5.000.
Tachibana, Kan-ichi: *See*—
Harada, Mikio; Tachibana, Kan-ichi; Uchida, Akio; and Saitoh, Takashi, 4,317,155, Cl. 361-120.000.
Tachiki, Tatsuo, to Kabushiki Kaisha Kaneda Kikai Seisakusho. Exposure apparatus. 4,316,669, Cl. 355-91.000.
Taig, Alistair G., to Bendix Corporation, The. Self-energized power steering unit. 4,316,519, Cl. 180-148.000.
Taiho Kogyo Co., Ltd.: *See*—
Ueda, Hiroshi; Shimazaki, Masao; and Kuwazuru, Yasumitsu, 4,316,834, Cl. 260-38.000.
Taillet, Joseph, to Office Nationale d'Etudes et de Recherches Aerospatiales. Device for chemical dry etching of integrated circuits. 4,316,791, Cl. 204-298.000.
Takahashi, Michiko: *See*—
Shirato, Yoshiaki; Takatori, Yasushi; Hara, Toshitami; Nishimura, Yukuo; and Takahashi, Michiko, 4,317,124, Cl. 346-140.00R.
Takahashi, Yoshikazu; Tomiyashu, Shizuo; and Takitani, Masaru, to Toyo Stauffer Chemical Co., Ltd. Titanium trichloride catalytic component and method for homo- or copolymerization of α-olefin. 4,316,975, Cl. 526-142.000.
Takai, Isao, to Oda Gosen Kogyo Kabushiki Kaisha. False-twisting system. 4,316,358, Cl. 57-286.000.
Takase, Sadao; and Fujishiro, Takeshi, to Nissan Motor Company, Limited. Signal averaging device. 4,317,182, Cl. 364-734.000.
Takatori, Yasushi: *See*—
Shirato, Yoshiaki; Takatori, Yasushi; Hara, Toshitami; Nishimura, Yukuo; and Takahashi, Michiko, 4,317,124, Cl. 346-140.00R.
Takemoto, Nagayasu: *See*—
Kaneko, Kunishige; Tashiro, Mamoru; Takemoto, Nagayasu; Imabayashi, Itaru; and Furukawa, Takashi, 4,316,753, Cl. 148-12.00F.
Takemura, Katsuyoshi: *See*—
Nogawa, Kenji; Takemura, Katsuyoshi; and Okada, Yoshifumi, 4,316,320, Cl. 29-839.000.
Takenaka, Hiroyuki: *See*—
Hirakawa, Tadashi; Sasashige, Hiroaki; Takenaka, Hiroyuki; and Katayama, Keiichi, 4,316,761, Cl. 156-472.000.
Takeyama, Kosei, to Toshiba Kikai Kabushiki Kaisha. Machining unit for use in machine tool. 4,316,684, Cl. 408-236.000.
Takitani, Masaru: *See*—
Takahashi, Yoshikazu; Tomiyashu, Shizuo; and Takitani, Masaru, 4,316,975, Cl. 526-142.000.
Tallent, Othar K.; Mailen, James C.; Bell, Jimmy T.; and Arwood, Phillip C., to United States of America, Energy. Method of removing Pu(IV) polymer from nuclear fuel reclaiming liquid. 4,316,776, Cl. 204-1.500.
Tambini, Angelo L.: *See*—
Kibblewhite, Ian E.; Boys, John T.; and Tambini, Angelo L., 4,316,512, Cl. 173-12.000.
Tamura, Masami: *See*—
Kurachi, Shogo; Tamura, Masami; and Ueda, Akio, 4,316,503, Cl. 165-175.000.
Tanaka, Hiroyoshi; Fujii, Shigeru; and Suzuki, Mitsuo, to Toray Industries, Inc. Water absorbent acrylic fiber. 4,316,937, Cl. 428-376.000.
Tanaka, Yasuya: *See*—
Fujimura, Noriaki; Kinoshita, Tsuneo; Aono, Tadashi; Kaku, Takashi; and Tanaka, Yasuya, 4,317,207, Cl. 375-19.000.
Tandrup, Niels; and Petersen, Alex, to Danfoss A/S. Electrohydraulic control apparatus. 4,316,486, Cl. 137-625.640.
Tapco International, Inc.: *See*—
Jandrasi, Frank J., 4,316,483, Cl. 137-315.000.
Tashiro, Mamoru: *See*—
Kaneko, Kunishige; Tashiro, Mamoru; Takemoto, Nagayasu; Imabayashi, Itaru; and Furukawa, Takashi, 4,316,753, Cl. 148-12.00F.
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Taskis, Charles B., to Becham Group Limited. Process for the preparation of solid sodium amoxycillin. 4,316,886, Cl. 424-80.000.
Tatara, Shokichi, to Sony Corporation. Moving coil pickup cartridge. 4,317,191, Cl. 369-147.000.
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Laquerbe, Michel; and Tatard, Francois, 4,316,826, Cl. 260-15.000.
Tavel, Donald L.; and Beigel, Michael L., to Tavel, Donald L. Music synthesizer. 4,316,401, Cl. 84-1.010.
Taylor, Jack A.; Beach, Wayne H.; and Weyant, Raymond C., Jr., to Kennametal Inc. Excavation and road maintenance bits and blocks. 4,316,636, Cl. 299-92.000.
Taylor Lock Company: *See*—
Schwartz, Jerome; and Infante, George J., 4,317,108, Cl. 340-64.000.
Taylor, Robert W.; and Shell, Thomas E., to United States of America, Energy. High temperature lubricating process. 4,316,921, Cl. 427-249.000.
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Lam, Tat C., 4,317,205, Cl. 375-7.000.
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Tischer, Kurt; Tecl, Bohuslav; and Fottinger, Walter, 4,316,931, Cl. 428-267.000.
Tecumseh Products Company: *See*—
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Mayborg, Charles C.; and Teel, Delbert L., II, 4,316,674, Cl. 400-478.000.
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Minemura, Norihiro; Toyao, Manabu; Kobayashi, Tsukasa; and Tashiro, Mikio, 4,316,924, Cl. 428-89.000.
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Grear, Horace S.; and Leno, Theodore M., 4,316,567, Cl. 226-74.000.
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Texaco Inc.: *See*—
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Mac Lean, John P.; Cantwell, J. Edward; Brown, John D.; and Hoy, Harold D., 4,316,729, Cl. 55-459.00R.
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Texas Instruments Incorporated: *See*—
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Peterson, Robert W., 4,317,094, Cl. 335-13.000.
Teza, Jeffrey R.; and Lies, Kenneth A., 4,317,181, Cl. 364-707.000.
Ulug, Mehmet E., 4,317,196, Cl. 370-94.000.
Ulug, Mehmet E., 4,317,197, Cl. 370-94.000.
Teza, Jeffrey R.; and Lies, Kenneth A., to Texas Instruments Incorporated. Four mode microcomputer power save operation. 4,317,181, Cl. 364-707.000.
Tezuka, Nobuo: *See*—
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Themy, Constantinos D. High voltage electrolytic cell. 4,316,787, Cl. 204-242.000.
Therapac Division, Krelitz Industries, Inc.: *See*—
Beskin, Gerald S., 4,316,473, Cl. 128-763.000.
Theurer, Josef; and Oellerer, Friedrich, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Mobile apparatus for replacing old track ties by new track ties. 4,316,416, Cl. 104-2.000.
Thiel, Ferdinand A., to Bell Telephone Laboratories, Incorporated. Detection of defects in semiconductor materials. 4,316,765, Cl. 156-626.000.
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Boubouleix, Albert, 4,317,230, Cl. 455-319.000.
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Thorn Electrical Industries Limited: *See*—
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Thornley, Glenn D., to Du Pont de Nemours, E. I., and Company. High-solids polyester and aminoplast coating composition. 4,316,940, Cl. 428-413.000.
Thorsett, Eugene D.; Patchett, Arthur A.; Harris, Elbert E.; and Maycock, Alan L., to Merck & Co., Inc. Aminoacid derivatives as antihypertensives. 4,316,896, Cl. 424-200.000.
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Tickner, Ernest G., to Ultra Med, Inc. Flow rate measurement. 4,316,391, Cl. 73-861.250.
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Tillson, Robert S.; Olashaw, William F.; and Postlethwait, James H., to General Electric Company. Electrical switchboard having improved drawout apparatus. 4,317,160, Cl. 361-339.000.
Ting, Raymond M. L. Thermally insulated building construction panel and a wall formed from such panels. 4,316,351, Cl. 52-309.900.
Tioxide Group Limited: *See*—
Bruckman, Katarzyna, 4,316,821, Cl. 252-461.000.
Tischer, Kurt; Tecl, Bohuslav; and Fottinger, Walter, to Carl Freudenberg, Firma. Planar textile structure with improved heat retention. 4,316,931, Cl. 428-267.000.
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Tokico Ltd.: *See*—
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Toko Yakuhin Kogyo Kabushiki Kaisha: *See*—
Kamishita, Takuzo; and Kamishita, Kazuhiko, 4,316,887, Cl. 424-81.000.
Tokuda, Ryuji; Mashimo, Yukio; and Uchidoi, Masanori, to Canon Kabushiki Kaisha. Circuits for flash equipment. 4,317,070, Cl. 315-241.00P.
Tokuda, Toshimasa, to Teijin Chemicals Ltd. Fire-retardant polycarbonate composition. 4,316,838, Cl. 260-45.95G.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Ito, Susumu, 4,317,016, Cl. 219-10.49R.
Tokyo Shibaura Electric Co., Ltd.: *See*—
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Tomiyashu, Shizuo: *See*—
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Tompkins, Elliot N., to Harris Corporation. Optical scan head and printer. 4,317,137, Cl. 358-286.000.
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Tonikian, Robert T.: *See*—
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Torrington, Leslie A., to RCA Corporation. Video disc caddy. 4,316,539, Cl. 206-307.000.
Tosaka, Yoichi; Hashimoto, Teiji; and Tezuka, Nobuo, to Canon Kabushiki Kaisha. Brake device for shutter. 4,316,662, Cl. 354-241.000.
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Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
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Tranberg, Stephanie K., to Burroughs Corporation. Method of fabricating electrical contacts in a printed circuit board. 4,316,322, Cl. 29-852.000.
Trattner, Burton C., to Harvey-Westbury Corp. Audible vacuum detector. 4,317,107, Cl. 340-52.00R.
Trayco, Inc.: *See*—
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Treppesch, Franz: *See*—
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Trickett, Stanley, to Simon-Barron Limited. Die for pelletizing machine. 4,316,713, Cl. 425-331.000.
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Trusch, Raymond B., to United Technologies Corporation. Thermoelectric integrated membrane evaporation system. 4,316,774, Cl. 203-11.000.
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Shoup, Thomas E., 4,317,020, Cl. 219-98.000.
Tsukada, Kazumasa, to Nippon Electric Co., Ltd. System for transmitting optical binary data signals through an optical fiber with pilot pulses inserted between two wide spaced successions of data signals. 4,317,235, Cl. 455-607.000.
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Tu, Hosheng; and Sohn, Stephen W., to UOP Inc. Technique to reduce the zeolite molecular sieve solubility in an aqueous system. 4,316,819, Cl. 252-430.000.
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Tunick, Allen A.; Largman, Theodore; and Sifniades, Stylianos, to Allied Corporation. Extraction of uranium values from phosphoric acid. 4,316,877, Cl. 423-10.000.
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Turner, Charles E., to Hi-Mark Industries, Inc. Mechanical joint. 4,316,676, Cl. 403-260.000.
Turner, Gerald D.; and Wischoff, Donald F., to Container Corporation of America. Container for dispensing rolled product. 4,316,563, Cl. 225-41.000.
Twin Disc, Incorporated: *See*—
Aschauer, George R., 4,316,722, Cl. 440-74.000.
TX RX Systems, Inc.: *See*—
Kaegebein, Daniel P., 4,317,216, Cl. 455-16.000.
Tyree, Joe W. Rotary engine with internal or external pressure cycle. 4,316,439, Cl. 123-246.000.
Uchida, Akio: *See*—
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Ueda, Akio: *See*—
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Ueda, Hiroshi; Shimazaki, Masao; and Kuwazuru, Yasumitsu, to Taiho Kogyo Co., Ltd. Wear resistant sliding element having a low coefficient of friction. 4,316,834, Cl. 260-38.000.
Ueda, Kouichi: *See*—
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Uemura, Hiroki: *See*—
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Uerpmann, Ernst-Peter, to Gesellschaft fur Strahlen-und Umweltforschung mbH. Seal for a storage bore hole accommodating radioactive waste and method of applying the seal. 4,316,814, Cl. 252-633.000.
Ultra Med, Inc.: *See*—
Tickner, Ernest G., 4,316,391, Cl. 73-861.250.
Ulug, Mehmet E., to Texas Instruments Incorporated. Transparent intelligent network for data and voice. 4,317,196, Cl. 370-94.000.
Ulug, Mehmet E., to Texas Instruments Incorporated. Transparent intelligent network for data and voice. 4,317,197, Cl. 370-94.000.
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Union Carbide Corporation: *See*—
Barth, Bruce P.; Johnson, Robert N.; Mayer, Walter P.; and Pinkston, Bruce H. W., 4,316,875, Cl. 422-133.000.
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Rim, Yong S.; Davison, John A.; and Nudenberg, Walter, 4,316,971, Cl. 525-310.000.
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United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See*—
Hughes, Brian T.; Vokes, John C.; and Wight, David R., 4,317,125, Cl. 357-15.000.
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Hutter, Ernest, 4,316,770, Cl. 376-175.000.
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Tallent, Othar K.; Mailen, James C.; Bell, Jimmy T.; and Arwood, Phillip C., 4,316,776, Cl. 204-1.500.
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Federal Communications Commission: *See*—
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Quesnell, Harris A., Jr., 4,317,211, Cl. 375-87.000.
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Dekker, Cornelis B.; and Boschma, Klaas M., 4,317,210, Cl. 375-76.000.
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United States Steel Corporation: *See*—
Grosko, John A., 4,316,561, Cl. 222-606.000.
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United Technologies Corporation: *See*—
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Ushikoshi, Kenichi, to Kabushiki Kaisha Suwa Seikosha. Magnetic shielding plate for a step motor in an electronic wristwatch. 4,317,188, Cl. 368-293.000.
Vac-O-Cast, Inc.: *See*—
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Vachon, Raymond N.: *See*—
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Valbona, Bruno M., to Dynamics Corporation of America. Liquid dispenser for food processor. 4,316,584, Cl. 241-38.000.
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Vamco Machine and Tool, Inc.: *See*—
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VanDar- arka, Juel L. Mailbox indicator. 4,316,575, Cl. 232-35.000.
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Dijkmans, Eise C.; and van de Plassche, Rudy J., 4,317,128, Cl. 357-46.000.
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van der Lely, Cornelis. Soil cultivating machine with interconnected pivoted members. 4,316,510, Cl. 172-657.000.
van der Lely, Cornelis; and van der Lely, Ary, to C. van der Lely, N.V. Spreader suitable for spreading granular and/or powdery material. 4,316,581, Cl. 239-682.000.
Van Gasse, Rene L. E., to Stamicarbon, B.V. Molding of layered objects from thermosetting resins. 4,316,869, Cl. 264-255.000.
Van Gerwen, Petrus J.; and Snijders, Wilfred A. M., to U.S. Philips Corporation. Arrangement for checking the synchronization of a receiver. 4,317,212, Cl. 375-113.000.
Van Hijfte, Willy H. P.; and Goethals, Rafael A. J., to Compagnie Neerlandaise de l'Azote. Process for preparing stabilized, ammonium nitrate containing granules. 4,316,736, Cl. 71-59.000.
Vanner, Inc.: *See*—
Sullivan, James D., 4,317,165, Cl. 363-41.000.
Van Pelt, Willem; and Roodenrijs, Jacques P., to Grasso's Koniklijke Machinefabrieken, N.V. Multi-stage counter-current concentrating method. 4,316,368, Cl. 62-542.000.
Van Pool, Joe, to Phillips Petroleum Company. Treatment of sulfur-containing HF-alkylation feed, hydrocarbon product, propane and acid-soluble oils derived from the alkylation. 4,316,998, Cl. 585-712.000.
Van Scott, Eugene J.: *See*—
Yu, Ruey J.; and Van Scott, Eugene J., 4,316,902, Cl. 424-266.000.
Vapor Corporation: *See*—
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Varen Technology: *See*—
Vaughan, Ronald J., 4,316,997, Cl. 385-458.000.
Varon, David S.; and Silverman, Irving, to Crown Metal Mfg. Co. Hang rail support and hang rail. 4,316,546, Cl. 211-105.100.
Varon, David S., to Crown Metal Manufacturing Co. Hang rail support and hang rail. 4,316,547, Cl. 211-105.100.
Varta Limited: *See*—
Marcham, Douglas H.; and Reichter, Kenneth A., 4,316,945, Cl. 429-222.000.
Vaseen, Vesper A., to Robert Dougan Construction Co. Ozone production apparatus. 4,317,044, Cl. 422-186.300.
Vasiljuk, Petr J.: *See*—
Ragoza, Igor V.; Dalidovich, Alexandr S.; Begunov, Petr M.; Vasiljuk, Petr J.; Tonikian, Robert T.; Tonikian, Dina N.; and Makarenko, Alexandr V., 4,316,369, Cl. 66-81.000.
Vaughan, Ronald J., to Varen Technology. Alkylation process and apparatus useful therein. 4,316,997, Cl. 385-458.000.
VDO Adolf Schindling AG: *See*—
Leber, Dieter, 4,316,392, Cl. 73-861.830.
VEGA Vertrieb und Fertigung Elektronischer Gerate und Apparate Grieshaber KG: *See*—
Macho, Franz, 4,317,116, Cl. 340-870.390.
Veil, Martin, to L. Schuler GmbH. Protective device for a drawing press. 4,316,372, Cl. 72-4.000.
Verbeek, John M., to Agri-Canvas Inc. Conveyor belt. 4,316,536, Cl. 198-699.000.

Vermeer, Dick C.; and Biron, Raymond J., to Allied Corporation. Apparatus for intermittent application of fluid to yarn at a texturing device. 4,316,312, Cl. 28-255.000.
Viza, Dimitri, to International Institute of Differentiation Limited, The. Novel cell line. 4,316,962, Cl. 435-241.000.
VLSI Technology Research Association: *See*—
Wakatsuki, Nobuo; and Itoh, Osamu, 4,317,200, Cl. 371-25.000.
Voelker, Herbert: *See*—
Bozon, Alfred; Koberstein, Edgar; Pletka, Hans-Dieter; and Voelker, Herbert, 4,316,823, Cl. 252-465.000.
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Vogelnik, Josko. Pliers. 4,316,315, Cl. 29-229.000.
Vokes, John C.: *See*—
Hughes, Brian T.; Vokes, John C.; and Wight, David R., 4,317,125, Cl. 357-15.000.
Voller, Ronald L. Capped bolt. 4,316,690, Cl. 411-377.000.
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Voss, Kenneth E., to Engelhard Minerals & Chemicals Corp. Limestone-based sorbent agglomerates for removal of sulfur compounds in hot gases and method of making. 4,316,813, Cl. 252-189.000.
Vranas, Thomas, to United States of America, National Aeronautics and Space Administration. Hot foil transducer skin friction sensor. 4,317,102, Cl. 338-25.000.
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Wada, Kenichi; and Hinai, Mamoru, to Hitachi, Ltd. Microinstruction controlled data processing system including micro-instructions with data align control feature. 4,317,170, Cl. 364-200.000.
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Waitkus, Phillip A.; and D'Alelio, Gaetano F., to Plastics Engineering Company. Polyimide derivatives having terminal unsaturated amides. 4,316,843, Cl. 260-326.00S.
Waitkus, Phillip A.; and D'Alelio, Gaetano F., to Plastics Engineering Company. Polyimide derivatives having unsaturated terminal amic acid groups. 4,316,844, Cl. 260-326.00S.
Waitkus, Phillip A.: *See*—
D'Alelio, Gaetano F.; and Waitkus, Phillip A., 4,316,845, Cl. 260-326.00S.
Waitun, Eberhard: *See*—
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Wakatsuki, Nobuo; and Itoh, Osamu, to VLSI Technology Research Association. Method and device for testing a sequential circuit divided into a plurality of partitions. 4,317,200, Cl. 371-25.000.
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Walkden, David J., to Diamond Shamrock Industrial Chemicals Limited. Plasticizer compositions for use with synthetic resin polymers. 4,316,832, Cl. 260-31.80N.
Walker, James T., to Cromemco Inc. Composite display device for combining image data and method. 4,317,114, Cl. 340-721.000.
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Walski, Donald J. Endotracheal tube not requiring adhesive tape. 4,316,459, Cl. 128-207.170.
Walthall, Bobby K.; and Harris, Sammy E., to Chaparral Marine Products, Inc. Fishing line spool holder. 4,316,588, Cl. 242-129.620.
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Young, Brian W.: *See*—
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Yu, Conrad M.; and Illige, John D., to United States of America, Energy. Apparatus for electroplating particles of small dimension. 4,316,786, Cl. 204-223.000.
Yu, Ruey J.; and Van Scott, Eugene J. Therapeutic compositions and vehicles for topical pharmaceuticals. 4,316,902, Cl. 424-266.000.
Zaccariotto, Moise, to Automobiles Peugeot; and Societe Anonyme Automobiles Citroen. Convertible automobile seat structure provided with a safety belt hooking device. 4,316,633, Cl. 297-331.000.
Zachry, Clyde L.; and McCutchen, William C., to Burroughs Corporation. Magnet mounting tool. 4,316,605, Cl. 269-43.000.
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Zimmerman, Robert L.: *See*—
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Zwarts, Cornelis M. G., to Canadian Patents & Development Limited. Transducer for measuring the velocity or displacement or both of ferromagnetic material. 4,317,077, Cl. 324-179.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 23RD DAY OF FEBRUARY, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Inoue, Kiyoshi. Electromagnetic fluidics system and method. Re. 30,870, Cl. 137-13.000.

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Takanishi, Yutaka T. Peach tree. 4,827, 2-23-82, Cl. 43.000.

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309.9 4,316,351
656 4,316,352

CLASS 53

384 4,316,353
538 4,316,354

CLASS 55

41 4,316,725
89 4,316,726
107 4,316,727
226 4,316,728
459 R 4,316,729
524 4,316,730

CLASS 56

11.3 4,316,355
16.2 4,316,356

CLASS 57

95 4,316,357
286 4,316,358

CLASS 60

212 4,316,359
275 4,316,360
398 4,316,361
646 4,316,362

CLASS 62

89 4,316,363
129 4,316,364
151 4,316,365
192 Re.30,869
200 4,316,366
238.6 4,316,367
542 4,316,368

CLASS 65

5 4,316,731
27 4,316,732
99 A 4,316,733
135 4,316,734
164 4,316,735

CLASS 66

81 4,316,369

CLASS 68

5 D 4,316,370

CLASS 70

417 4,316,371

CLASS 71

59 4,316,736
88 4,316,737

CLASS 72

4 4,316,372
45 4,316,373
91 4,316,374
105 4,316,375
161 4,316,376
189 4,316,377
268 4,316,378
351 4,316,379

CLASS 73

23 4,316,380
27 R 4,316,381
4,316,382
55 4,316,383
76 4,316,384
104 4,316,385
151 4,316,386
190 H 4,316,387
356 4,316,388
504 4,316,389
620 4,316,390
861.25 4,316,391
861.83 4,316,392
864.45 4,316,393

CLASS 74

5.46 4,316,394
866 4,316,395

CLASS 75

0.5 BA 4,316,738
40 4,316,739
42 4,316,740
4,316,741
76 4,316,742
124 4,316,743

CLASS 76

61 4,316,396

CLASS 81

483 4,316,397

CLASS 82

2.7 4,316,398

CLASS 83

137 4,316,399
425.2 4,316,400

CLASS 84

1.01 4,316,401
280 4,316,402

CLASS 89

12 4,316,403
36 H 4,316,404

CLASS 98

33 R 4,316,405
40 D 4,316,407
40 R 4,316,406
41 R 4,316,408

CLASS 99

275 4,316,409

CLASS 100

48 4,316,410
50 4,316,411

CLASS 102

202.5 4,316,412
210 4,316,413
247 4,316,414
275.8 4,316,415

CLASS 104

2 4,316,416

CLASS 105

197 DB 4,316,417
215 C 4,316,418

CLASS 106

38.35 4,316,744
287.34 4,316,745
288 B 4,316,746

CLASS 108

56.1 4,316,419

CLASS 110

347 4,316,420

CLASS 112

184 4,316,421
258 4,316,422
262.1 4,316,423

CLASS 114

39 4,316,424
141 4,316,425
263 4,316,426

CLASS 116

215 4,316,427

CLASS 118

203 4,316,428
504 4,316,429
725 4,316,430

CLASS 119

3 4,316,431
22 4,316,432
158 4,316,433

CLASS 122

20 B 4,316,434
235 F 4,316,435
451 S 4,316,436

CLASS 123

90.18 4,316,437
198 F 4,316,438
246 4,316,439
428 4,316,440
502 4,316,441
546 4,316,442

CLASS 124

35 A 4,316,443

CLASS 126

77 4,316,444
4,316,445
200 4,316,446
369 4,316,447
424 4,316,448
429 4,316,449
432 4,316,450
440 4,316,451
450 4,316,452

CLASS 127

37 4,316,747
4,316,748
55 4,316,749

CLASS 128

1.3 4,316,453
77 4,316,454
132 D 4,316,455
4,316,456
156 4,316,457
205.24 4,316,458
207.17 4,316,459
214 R 4,316,460
4,316,461
218 F 4,316,463
218 N 4,316,462
253 4,316,464
276 4,316,465
278 4,316,466
303.1 4,316,467
325 4,316,468
334 R 4,316,469
346 4,316,470
419 D 4,316,472
419 P 4,316,471
763 4,316,473
804 4,316,474

CLASS 131

340 4,316,475

CLASS 132

40 4,316,476

CLASS 134

18 4,316,750
96 4,316,477

CLASS 137

13 Re.30,870
14 4,316,478
85 4,316,479
119 4,316,480
302 4,316,481
315 4,316,482
4,316,483
389 4,316,484
625.4 4,316,485
625.64 4,316,486

CLASS 138

89 4,316,487

CLASS 139

13 R 4,316,488

CLASS 141

1 4,316,489
9 4,316,490

CLASS 144

39 4,316,491

CLASS 148

6.15 Z 4,316,751
6.16 4,316,752
12 F 4,316,753

CLASS 150

35 4,316,492

CLASS 156

205 4,316,755
227 4,316,756
286 4,316,757
351 4,316,758
387 4,316,759
468 4,316,760
472 4,316,761
488 4,316,762
513 4,316,763
617 H 4,316,764
626 4,316,765
631 4,316,766

CLASS 159

47 UA 4,316,767

CLASS 160

168 R 4,316,493

CLASS 162

336 4,316,768
360 R 4,316,769

CLASS 164

448 4,316,494
457 4,316,495
477 4,316,496
479 4,316,497
519 4,316,498

CLASS 165

9 4,316,499
4,316,500
70 4,316,501
140 4,316,502
175 4,316,503

CLASS 166

53 4,316,504
293 4,316,505

CLASS 169

69 4,316,506

CLASS 172

225 4,316,507
271 4,316,508
297 4,316,509
657 4,316,510
776 4,316,511

CLASS 173

12 4,316,512
91 4,316,513

CLASS 174

65 R 4,316,999
70 R 4,317,000
102 SC 4,317,001
105 R 4,317,002
106 R 4,317,003

CLASS 175

66 4,316,514
372 4,316,515

CLASS 177

25 4,316,516
4,316,517
4,316,518

CLASS 178

15 4,317,004
19 4,317,005
46 4,317,006

CLASS 179

18 BC 4,317,007
18 FC 4,317,008
115.5 H 4,317,009
175.31 R 4,317,010

CLASS 180

148 4,316,519
215 4,316,520
247 B1 4,103,753

CLASS 181

114 4,316,521
224 4,316,522
226 4,316,523

CLASS 182

93 4,316,524
106 4,316,525
135 4,316,526

CLASS 187

8.71 4,316,527
9 E 4,316,528

CLASS 188

1.11 4,316,529
73.39 4,316,530

CLASS 192

114 R 4,316,531

CLASS 194

1 N 4,316,532
4 C 4,316,533

CLASS 198

345 4,316,534
347 4,316,754
473 4,316,535
699 4,316,536
731 4,316,537

CLASS 200

5 A 4,317,011
4,317,012
4,317,013
61.62 4,317,014
153 J 4,317,015

CLASS 202

163 4,316,772
263 4,316,773

CLASS 203

11 4,316,774
43 4,316,775

CLASS 204

1.5 4,316,776
2.1 4,316,777
5 4,316,778
29 4,316,779
35 N 4,316,780
98 4,316,781
129 4,316,782
159.18 4,316,783
181 C 4,316,784
192 S 4,316,785
223 4,316,786
242 4,316,787
243 M 4,316,788
296 4,316,789
4,316,790
298 4,316,791

CLASS 206

216 4,316,538
307 4,316,539
507 4,316,540
532 4,316,541

CLASS 208

10 4,316,792
4,316,793
111 4,316,794
120 4,316,795
313 4,316,796

CLASS 209

39 4,316,542
166 4,316,797
223 R 4,316,798
504 4,316,799
673 4,316,543

CLASS 210

90 4,316,801
95 4,316,802
455 4,316,803
651 4,316,800
671 4,316,804
693 4,316,805

708 4,316,806

CLASS 211

5 4,316,544
60 T 4,316,545
105.1 4,316,546
4,316,547

CLASS 212

196 4,316,548

CLASS 213

127 4,316,549

CLASS 215

360 4,316,550

CLASS 219

10.49 R 4,317,016
10.55 E 4,317,017
69 M 4,317,019
98 4,317,020
121 EU 4,317,022
121 LG 4,317,021
121 LN 4,317,023
144 4,317,024
202 4,317,025
216 4,317,018
4,317,026
553 4,317,027

CLASS 220

1 R 4,316,551
19 4,316,552

CLASS 221

167 4,316,553
232 4,316,554

CLASS 222

83.5 4,316,555
95 4,316,556
129.1 4,316,557
181 4,316,558
225 4,316,559
567 4,316,560
606 4,316,561

CLASS 223

102 4,316,562

CLASS 225

41 4,316,563
77 4,316,564
99 4,316,565

CLASS 226

2 4,316,566
74 4,316,567
118 4,316,568
158 4,316,569
176 4,316,570

CLASS 228

173 C 4,316,571
263 R 4,316,572
4,316,573

CLASS 229

62.5 4,316,574

CLASS 232

35 4,316,575

CLASS 233

26 4,316,576

CLASS 235

380 4,317,028
454 4,317,029
489 4,317,030

CLASS 236

46 R 4,316,577

CLASS 238

283 4,316,578

CLASS 239

123 4,316,579
466 4,316,580
682 4,316,581
692 4,316,582

CLASS 241

1 4,316,583
38 4,316,584
211 4,316,585

CLASS 242

65 4,316,586
75.53 4,316,587
129.62 4,316,588
197 4,316,589
199 4,316,590

CLASS 248

97 4,316,591
187 4,316,592
250 4,316,593

CLASS 249

18 4,316,594
94 4,316,595

CLASS 250

203 R 4,317,031
231 SE 4,317,032
253 4,317,033
262 4,317,034
272 4,317,035
274 4,317,036
367 4,317,037
385 4,317,038
418 4,317,039
421 4,317,040
435 4,317,041
493 4,317,042
510 4,317,043
554 4,317,045

CLASS 251

58 4,316,596
4,316,597
63 4,316,598
129 4,316,599
245 4,316,600

CLASS 252

8.5 A 4,316,807
8.55 D 4,316,808
4,316,809
8.55 R 4,316,810
88 4,316,811
99 4,316,812
189 4,316,813
301.18 4,316,817
301.22 4,316,815
301.6 S 4,316,816
429 B 4,316,818
430 4,316,819
431 N 4,316,820
461 4,316,821
462 4,316,822
465 4,316,823
551 4,316,824
633 4,316,814

CLASS 254

86 R 4,316,601
270 4,316,602

CLASS 260

5 4,316,825
15 4,316,826
17.2 4,316,827
23.5 A 4,316,828
28.5 AS 4,316,829
29.6 MQ 4,316,830
29.6 S 4,316,831
31.8 N 4,316,832
33.6 PQ 4,316,833
38 4,316,834
40 R 4,316,835
42.21 4,316,836
45.8 N 4,316,837
45.95 G 4,316,838
239 BC 4,316,840
4,316,841
239.3 T 4,316,839
245.2 R 4,316,842
326 S 4,316,843
4,316,844
4,316,845
326.1 4,316,850
326.45 4,316,846
326.46 4,316,847
397.1 4,316,848
4,316,849
408 4,316,851
414 4,316,852
429.7 4,316,853
453.1 4,316,854
465.3 4,316,855
4,316,856
465.8 D 4,316,857
502.4 R 4,316,858
4,316,859
513.7 4,316,860
543 F 4,316,861
543 R 4,316,862

CLASS 261

98 4,316,863

CLASS 264

86 4,316,864
109 4,316,865
157 4,316,866
169 4,316,867
171 4,316,868
255 4,316,869
296 4,316,870

CLASS 266

282 4,316,603

CLASS 267

64.19 4,316,604

CLASS 269

43 4,316,605

CLASS 271

10 4,316,606
151 4,316,607

CLASS 272

117 4,316,608
118 4,316,609
137 4,316,610

CLASS 273

85 D 4,316,611
272 4,316,612
401 4,316,613

CLASS 279

1 G 4,316,614

CLASS 280

47.26 4,316,615
289 WC 4,316,616
402 4,316,617
613 4,316,618
804 4,316,619
824 4,316,620

CLASS 282

27.5 4,316,621

CLASS 285

8 4,316,623
119 4,316,622
158 4,316,624

CLASS 290

1 R 4,317,046
53 4,317,047
4,317,048

CLASS 291

1 4,316,625

CLASS 292

285 4,316,626

CLASS 294

1 BA 4,316,627
64 R 4,316,628
152 4,316,629

CLASS 296

1 S 4,316,630

CLASS 297

284 4,316,631
291 4,316,632
331 4,316,633
349 4,316,634
451 Re.30,871

CLASS 299

80 4,316,635
92 4,316,636

CLASS 301

37 P 4,316,638
37 R 4,316,637

CLASS 303

6 C 4,316,639
20 4,316,640
92 4,316,641
116 4,316,642

CLASS 307

39 4,317,049
246 4,317,051
261 4,317,052
269 4,317,053
297 4,317,054
304 4,317,055
350 4,317,056
541 4,317,050

CLASS 308

26 4,316,643

CLASS 310

11 4,317,057
24 4,317,058
361 4,317,059

CLASS 312

108 4,316,644
212 4,316,645

CLASS 313

113 4,317,060
174 4,317,061
175 4,317,062
388 4,317,063
406 4,317,064
414 4,317,065
493 4,317,066

CLASS 315

150 4,317,067
209 CD 4,317,068
227 R 4,317,069
241 P 4,317,070
312 4,317,071

CLASS 318

138 4,317,072
483 4,317,073
808 4,317,074

CLASS 320

53 4,317,075

CLASS 323

210 4,317,076

CLASS 324

179 4,317,077
208 4,317,078
326 4,317,079

CLASS 328

151 4,317,080

CLASS 330

268 4,317,081
288 4,317,082
296 4,317,083

CLASS 331

57 4,317,084
107 R 4,317,091

CLASS 333

165 4,317,092
187 4,317,093

CLASS 335

13 4,317,094
149 4,317,095

CLASS 336

70 4,317,096

CLASS 337

89 4,317,097
113 4,317,098
170 4,317,099
347 4,317,100

CLASS 338

21 4,317,101
25 4,317,102
160 4,317,103
330 4,317,104

CLASS 339

7 4,316,646
91 R 4,316,647

CLASS 340

52 F 4,317,106
52 R 4,317,105
4,317,107
64 4,317,108
146.3 AC 4,317,109
347 DD 4,317,111
568 4,317,112
630 4,317,113
721 4,317,114
784 4,317,115
825.91 4,317,110
870.39 4,317,116

CLASS 343

6 ND 4,317,117
100 R 4,317,118
112 CA 4,317,119
120 4,317,120
712 4,317,121
798 4,317,122

CLASS 346

135.1 4,317,123
140 R 4,317,124

CLASS 350

6.6 4,316,648
16 4,316,649
67 4,316,650
99 4,316,651
276 R 4,316,652
465 4,316,653

CLASS 351

155 4,316,654

CLASS 352

166 4,316,655
172 4,316,656

CLASS 354

23 D 4,316,657
27 4,316,658
42 4,316,659
50 4,316,660
234 4,316,661
241 4,316,662
299 4,316,663
321 4,316,664

CLASS 355

1 4,316,665
3 SH 4,316,667
3 TR 4,316,666
55 4,316,668
91 4,316,669

CLASS 356

349 4,316,670

CLASS 357

15 4,317,125
26 4,317,126
42 4,317,127
46 4,317,128

CLASS 358

13 4,317,129
108 4,317,130
128.5 4,317,131
142 4,317,132
158 4,317,133
213 4,317,134
227 4,317,135
256 4,317,136
286 4,317,137
291 4,317,138
300 4,317,139

CLASS 360

10 4,317,140
60 4,317,141
67 4,317,142
74.1 4,317,143
76 4,317,144
96.6 4,317,145
98 4,317,146
113 4,317,147
119 4,317,148
126 4,317,149
135 4,317,150

CLASS 361

69 4,317,151
104 4,317,152
119 4,317,153
4,317,154
120 4,317,155
171 4,317,156
172 4,317,157
272 4,317,158
318 4,317,159
339 4,317,160

CLASS 362

103 4,317,161
106 4,317,162
362 4,317,163
432 4,317,164

CLASS 363

41 4,317,165
138 4,317,166

CLASS 364

185 4,317,167
200 4,317,168
4,317,169
4,317,170
4,317,171
405 4,317,172
426 4,317,173
432 4,317,174
464 4,317,175
474 4,317,176
483 4,317,177
510 4,317,178
515 4,317,179
707 4,317,180
4,317,181
734 4,317,182
900 4,317,183

CLASS 366

192 4,316,671
212 4,316,672
337 4,316,673

CLASS 367

13 4,317,184
15 4,317,185
127 4,317,186

CLASS 368

88 4,317,187
293 4,317,188

CLASS 369

7 4,317,189
33 4,317,190
147 4,317,191
244 4,317,192

CLASS 370

54 4,317,193
94 4,317,195
4,317,196
4,317,197
112 4,317,198
121 4,317,194

CLASS 371

16 4,317,199
25 4,317,200
38 4,317,201
43 4,317,202
60 4,317,203

CLASS 372

49 4,317,086
50 4,317,085
57 4,317,087
58 4,317,090
92 4,317,088
94 4,317,089

CLASS 375

1 4,317,204
7 4,317,205
10 4,317,206
19 4,317,207
27 4,317,208
62 4,317,209
76 4,317,210
87 4,317,211
113 4,317,212

CLASS 376

175 4,316,770
415 4,316,771

CLASS 385

458 4,316,997

CLASS 400

478 4,316,674

CLASS 403

22 4,316,675
259 4,316,678
260 4,316,676

CLASS 405

259 4,316,677
303 4,316,679

CLASS 406

49 4,316,680
162 4,316,681
187 4,316,682

CLASS 408

219 4,316,683
236 4,316,684

CLASS 409

182 4,316,685

CLASS 410

12 4,316,686
92 4,316,687
102 4,316,688

CLASS 411

57 4,316,689
377 4,316,690

CLASS 414

24.5 4,316,691
27 4,316,692
59 4,316,693
120 4,316,694
517 4,316,695
542 4,316,696
694 4,316,697

CLASS 416

11 4,316,698
139 4,316,699
226 4,316,700
4,316,701

CLASS 417

12 4,316,702
66 4,316,703
100 4,316,704
273 4,316,705

CLASS 418

16 4,316,706
60 4,316,707

CLASS 422

26 4,316,871
102 4,316,872
112 4,316,873
126 4,316,874
133 4,316,875
151 4,316,876
186.3 4,317,044

CLASSIFICATION OF PATENTS

CLASS 423

10	4,316,877
235	4,316,878
265	4,316,879
415 A	4,316,880
456	4,316,881

CLASS 424

1	4,316,883
9	4,316,882
19	4,316,884
80	4,316,886
81	4,316,887
116	4,316,894
122	4,316,885
127	4,316,888
177	4,316,889
	4,316,890
	4,316,891
	4,316,892
	4,316,895
180	4,316,893
200	4,316,896
244	4,316,897
246	4,316,898
250	4,316,899
	4,316,900
251	4,316,901
266	4,316,902
267	4,316,903
269	4,316,904
	4,316,932
274	4,316,905
	4,316,906
275	4,316,907
277	4,316,908
279	4,316,909
298	4,316,910
	4,316,911
300	4,316,912
304	4,316,913
305	4,316,914

CLASS 425

72 S	4,316,716
73	4,316,708
174.8 E	4,316,709
186	4,316,710
198	4,316,711
292	4,316,712
331	4,316,713
382.2	4,316,714
456	4,316,715

CLASS 426

5	4,316,915
329	4,316,916
540	4,316,917
	4,316,918
603	4,316,919

CLASS 427

96	4,316,920
249	4,316,921

CLASS 428

35	4,316,922
68	4,316,923
89	4,316,924
105	4,316,925
137	4,316,926
216	4,316,927
229	4,316,928
262	4,316,929
266	4,316,930
267	4,316,931
294	4,316,933
304.4	4,316,935
308.4	4,316,934
325	4,316,936
376	4,316,937
403	4,316,938
413	4,316,939
	4,316,940
421	4,316,941
432	4,316,942
475.8	4,316,943

CLASS 429

44	4,316,944
222	4,316,945

CLASS 430

9	4,316,946
94	4,316,947
	4,316,948
159	4,316,949
221	4,316,950
253	4,316,951
285	4,316,952
569	4,316,953

CLASS 432

8	4,316,717
58	4,316,718
60	4,316,719

CLASS 434

224	4,316,720

CLASS 435

4	4,316,954
47	4,316,955
96	4,316,956
119	4,316,957
	4,316,958
122	4,316,959
137	4,316,960
138	Re.30,872
167	4,316,961
241	4,316,962

CLASS 440

47	4,316,721
74	4,316,722

CLASS 455

1	4,317,213
	4,317,214
5	4,317,215
16	4,317,216
24	4,317,217
54	4,317,218
56	4,317,219
58	4,317,220
76	4,317,221
77	4,317,222
115	4,317,223
128	4,317,224
158	4,317,225
174	4,317,226
180	4,317,227
183	4,317,228
277	4,317,229
319	4,317,230
330	4,317,231
606	4,317,232
	4,317,233
	4,317,234
607	4,317,235
608	4,317,236

CLASS 493

419	4,316,723

CLASS 501

14	4,316,963
105	4,316,964
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